Gleanings in Bee Culture

VOL. XXXVIII AUGUST 1, 1910 NO. 15

A New Bee-book!

WE ARE fortunate in securing from the publishers just at this season a new book on bee culture, entitled "How to Keep Bees for Profit." It covers a field quite new in that it gives information to beginner and experienced bee-keeper alike, and covers all conditions, for the man who keeps but a colony or two in his back yard, and the one who numbers his colonies by the hundred and has outyards. A list of the phases of the subject covered will give you an idea of the real value of the book. They are as follows:

The book is so arranged that one may refer to the particular subject wanted without reading a lot of matter in which he has no immediate interest. The author is a practical bee-keeper, and writes in a simple manner which can not but be understood by the veriest novice, and is at the same time a convincing argument for the more advanced bee-keeper. The book contains 325 pages, and is fully illustrated by engravings which show details of the work at every step. No bee-keeper's library is complete without this book. Sold only in connection with a year's subscription to GLEANINGS IN BEE CULTURE. $1.50 for the combination. If you are already a subscriber we will advance your subscription a year and send the book at once on receipt of the price. Get it NOW so that you may profit by its teachings this season.

THE A. I. ROOT CO., Medina, Ohio:

For the enclosed $1.50 please send me at once one copy of HOW TO KEEP BEES FOR PROFIT, and enter my name for a year's subscription to GLEANINGS IN BEE CULTURE.

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Gleanings in Bee Culture

Published by The A. I. Root Co., Medina, Ohio.

H. H. Root, Assistant Editor
A. I. Root, Editor Home Department
E. R. Root, Editor
A. L. Boyden, Advertising Manager
J. T. Calvert, Business Manager

Entered at the Postoffice, Medina, Ohio, as Second-class Matter

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Editorial

In our next issue we expect to show a very interesting object-lesson on the subject of supporting foundation while it is being drawn into comb.

SENDING SAMPLES OF BROOD TO THE BUREAU OF ENTOMOLOGY.

Dr. E. F. Phillips, of the Bureau of Entomology, Washington, D. C., wishes us to say that the Bureau will be glad to receive for examination any samples of comb or brood supposed to be diseased. The Bureau will render a report without expense as soon as an examination can be made.

The work that Dr. Phillips and his assistants are doing in this line is of immense service to bee-keepers all over the country; and those who have suspicious patches of brood should send them on at once to Washington. Of course, care should be taken to put up the sample in strong boxes, either metal or wood. If they contain honey they should first be wrapped in paraffine paper. In lieu of this a strong manilla paper will do very well. Address each sample to Dr. E. F. Phillips, Bureau of Entomology, Washington, D. C.

IMPROVEMENTS IN EXTRACTING MACHINERY; HOW TO KEEP COOL.

The editors of this journal have been giving some little attention to the matter of extracting honey in a wholesale way. Oberlin, Ohio, where resides Mr. Chalon Fowls, was the center of our operations, and where too we have been testing out some improvements in the apparatus and machinery. We hope to show these later in these columns.

While we were "helping" to extract in the Fowls honey-house, we might incidentally remark that the little gasoline-engine, to run the power-extractor, the two gasoline-burners for the capping-melter, and the little oil-burner for the steam uncapping-knife, made the room uncomfortably warm. During the time the extractor was running, there was a slight breeze. It occurred to us that, at a very slight expense, a fan could be mounted, either on the extractor or belted on the engine. This would keep up a breeze that would amount to something. One scheme is to extend the extractor shaft up some three or feet above the top of the machine. On top of this, mount a fan something like the propellor wheel of a boat. Almost any one with a little ingenuity could rig up a couple of boards on the plan of an old-fashioned windmill. While the extractor was being run by the gas-engine this would make a nice light downward breeze all over the room. Another plan is to put a little fan on the end of a counter-shaft and belt to the gas-engine. In either case the expense would be slight, and would add materially to the comfort of those doing the work of extracting and uncapping.

THE ATTEMPT AT FOUL-BROOD LEGISLATION IN KENTUCKY FAILS.

As a general thing, the first attempt by bee-keepers at securing brood-disease legislation turns out to be unsatisfactory in some way or another. Very often the law is defective; but in the case of the effort put forth by the bee-keepers of Kentucky, the bill proposed had no enacting clause, and therefore was ineffective. We are indebted to W. C. Furnas for the following clipping giving a brief history of the proceedings. We hope that this first failure will only serve as an impetus to our southern brothers to get a law passed at the next opportunity, which shall be a model in every respect.

While preparing the acts of the legislature for the printers to be put in the Acts of 1910, Charles H. Morris discovered to-day that the bill by Senator Chipman, providing for inspection of apiaries, had no enacting clause, and, therefore, will be ineffective.

The fact that the important clause was left off the bill was not discovered when it was compared in the Senate nor when Gov. Wilson signed it. The bill was the pet of Senator N. B. Chipman, of Pendleton County, and was intended to protect bees from disease.

HONEY-CROP CONDITIONS; A FAIR FLOW FROM CLOVER AND A LIGHT CROP IN THE WEST.

In some respects this has been a peculiar season. In some localities there has been the most remarkable honey-flow ever known. In others, particularly south of the Ohio River, there has been "nothing doing." South of the Ohio River it has been too wet —rain, rain, all the time. In Michigan, Wisconsin, and Minnesota, there has been a drouth. In the western portion of the country, taking in the irrigated regions, the alfalfa crop will be light. There has been a light flow in Southern California. In parts of Iowa, Indiana, Ohio, New York, Pennsylvania, and in Vermont especially, there has

been an unusually heavy honey-flow from clover. Reports from these portions show that the fields were almost white with clover, as if they were covered with snow; and where it has not been too dry there has been from a fair to a good crop. In Michigan the first indications showed a light crop; but late rains are improving conditions somewhat. In Illinois the yield will be anywhere from light to fair. In Wisconsin and Minnesota, light to poor. Missouri and Nebraska will have a good yield. Taking it all in all, this will be a better clover year, probably, than we have had before for some time, and the quality will be of the very finest. The light crop of western alfalfa and sage honey will tend to give a boost to the price of clover, even if there should be a fairly good yield in the Eastern States.

The following are scattering reports received since our last issue, in answer to the following questions:

1. Condition of bees?
2. Climatic conditions (favorable or not)?
3. Are bee-men suffering from drouth or wet weather?
4. Prospects for honey crop?
5. Compare prospects with last year, same date.
6. Percentage of full crop harvested to date?
7. Compare yield with last year, same date.
8. Kind of honey produced in your locality, comb or extracted?
9. Color of honey produced this year?
10. Price local dealers are paying for honey?
11. Price bee-men are holding for?
12. Is the crop moving readily?

1, fair; 2, favorable; 3, no; 4, fair; 5, same; 6, 65 per cent; 7, same; 8, extracted alfalfa; 9, light amber; 10, 5¾; 11, 6 to 6½; 12, association marketing in East at 6 to 6½.

El Centro, Cal., July 15. H. PERKINS.

Honey conditions here are not quite so good as last year. Since July 1, conditions have improved, strong colonies working in second supers: medium strong freely in first, and weak ones rapidly building up.

Canon City, Col., July 22. W. G. WRIGHT.

1, weak early, but strong now; 2, favorable; 3, somewhat wet at present; 4, saw palmetto short; cabbage palmetto is yielding some now, but can't tell outcome; 5, a little better; 6, I don't know, but think ½; 7, about the same; short; 8, extracted; 9, light; 10, 75 to 80 per gal., but little handled; 11, 75 to 85; 12, it is not.

Osprey, Fla., July 19. I. T. SHUMARD.

Bees wintered badly; weather now favorable, but clover flow is over. Prospect for fall crop is only fair. Crop secured is a little larger than 1909; 25 per cent of crop harvested; only comb honey is produced. Honey produced is very fine and white. Honey is selling at 15 to 20. There will be none to move. Nearly one-half of the bees were lost in wintering. The cold weather in May was bad. Clover abundant, but yield small.

Milan, Ills., July 19. C. H. DIBBERN.

1, good; 2, not so good; from the 4th to 16th too much rain, but now the white clover is beginning to yield honey again; 3, been suffering from wet weather; 4, good; 5, nothing doing last year around here; 6, about 30 per cent; 7, bees had hardly enough to live on; 8, both; 9, white; 10, 18 to 20 for comb; 15 to 18 for chunk or strained; 11, 18 and 20; 12, sells as fast as taken off the hive.

Somerville, Ind., July 22. LEONARD D. MASSIE.

Honey is one-fourth of a good crop in Central Iowa.

Colo, Iowa, July 21. D. E. LHOMMEDIEU.

1, fair to good; 2, first part of season good, followed by drouth; 3, yes; 4, good; best crop for years; 5, not very good last year; 6, flow is over; 7, 150 lbs. better than last year; 8, both; 9, white.

Dixon, Iowa, July 19. E. A. DONEY.

White-clover honey-flow about as good as we have had in twenty years.

Shenandoah, Iowa, July 20. O. H. HYATT.

1, good; 2, very dry; 4, ½ crop to date; no prospects of fall flow; 7, ½ better; 8, comb; 9, light; 11, 15 cts.; 12, yes.

Viola, Ia., July 20. A. T. STOUT.

1, good; 2, fair; 3, rather dry; 4, average gain of my scale colony for June past 10 years, 35 lbs.; this year's gain for June, 46¾; 5, much better; 6, about 10 to 15 per cent; 7, scale colony, 1909, gain, 24 lbs.; 1910, gain of 55¼; 8, both; 9, white clover; 10, $3.60 per case of 24 sections; 11, $3.60 per case of 24 sections; 12, yes.

Russell, Iowa, July 9. J. C. DAVIS.

1, good; 2, dry, but better than wet years; 3, a little from drouth; 4, good: 5, 100 per cent better; 6, 90; 7, see No. 5; 8, mostly comb; 9, white-clover and basswood, quality good; beautiful; 10, 15; 11, 15; 12, just a little. In this locality it is the best season in years. Basswood is just over. The fall crop may depend on timely showers.

Forest City, Iowa, July 19. EUGENE SECOR.

1, my bees good; others, heavy winter loss: 2, no; 3, drouth stopped work July 4; 4, average; no basswood bloom; 5, 1:7; 6, 50; 8, both; 9, white; 10, about 15 cts. per lb., comb or sections; 11, as above; 12, too early; bound to be a demand greater than for years on account of no fruit; not even a Duchess apple here.

Marshalltown, Iowa, July 21. E. C. WHEELER.

1, bees healthy, all swarms weak June 1; 2, favorable; 3, nearly a drouth; 4, fair; 5, much better; 6, ½ to ⅔ to date; 7, much larger; 8, comb and extracted; 9, white, clover; 10, section, 12½; bulk, 11; extracted, 10, without container; 11, normally. No swarms this season from yard, and very few wild ones.

Buckgrove, Iowa, July 20. A. F. BONNEY.

1, fine condition; 2, never better; 3, just enough rain; condition fine; 4, very good; 5, no comparison; no white-clover honey last year; 6, 100 per cent; 7, very light at this date a year ago; full crop now; 8, mostly comb; 9, white thus far; 10, none to speak of on the market yet. I took off one super or one 24-section case which I am retailing at 15 cts. per section; price to dealers, 12½; 11, I am going to try for $3.50 from dealers; this is early honey; 12, in a retail way, yes; honey white, and finished.

Paullina, Ia., July 20. F. L. PARKE.

1, good; 2, fair; 3, no; 4, fair; 5, better; 6, ½; 7, 50 per cent better; 8, comb; 9, white, clover; 10, $3.00 to $3.25; 12, yes. Bees are in fine condition. White clover is about all over; averaged about 50 lbs. comb honey per colony.

Circleville, Kans., July 19. CHAS. S. BORDNER.

1, fine; 2, good, but too wet; 3, wet; 4, poor; 5, better; 6, 10 per cent; 7, last year, 0; 8, comb, mostly; 9, white; 10, no local dealers; 11, 15 cts., 4¼ sections; 12, none to move.

Walton, Ky., July 19. J. G. CRISLER.

1, fine: 2, too wet; 3, wet; 4, good, considering weather; 5, 50 per cent better; 6, one-third; 7, about double; 8, comb; 9, white; 10, 12½ cts.; 11, not holding; 12, yes.

Tupelo, Miss., July 20. J. D. ROWAN.

The honey season so far has been extra; have had plenty of rain; the prospects are good for fall flow.

Avalon, Mo., July 20. F. G. ASHBAUGH.

North Missouri will have one-half crop from white clover; quality good. We do not have any fall surplus here.

Unionville, Mo., July 19. ELMER F. QUIGLEY.

Total amount of honey for 1909, 5000 lbs.; colonies, 200; spring, 1910, had 250 colonies; up to date I have 250; no increase up to date. I have over 20,000 lbs. of honey. Nearly all extracted retails to the grocer, 9½. I sell almost all to consumers. I have extracted 3000 lbs., sold 2500; specific gravity, 43; honey is very white.

Liberty, Mo., July 19. J. F. DIEMER.

Since my last report the bees are doing better; had some nice rains. Bees are working well on basswood.

Wolverine, Mich., July 23. L. K. FEICK.

1, fair to good; 2, not favorable; 3, yes; very dry; 4, not the best; 5, not so good north, but better so far here; 6, none harvested here; some in Northern Michigan yard; 7, about ½; 8, both; 9, very light in color; 10, 11, 12, too early.

Otsego, Mich., July 21. O. H. TOWNSEND.

1, good; 2, unfavorable; 3, drouth; 4, 25 per cent; 5, about the same; 6, none; 7, about the same; 8, extracted; 9, light; 10, don't know; 11, 8 to 10 cts. for extracted; 12, will when off hive.
Dimondale, Mich., July 18. J. L. LEWIS.

1, good; 2, bad; 3, drouth; 4, not good; 5, same as last year; 6, 25 per cent; 7, same; 8, comb; 9, half white and half amber; 10, 12½ cents; 11, getting what they ask, 12½ cents, because it has been mixed so far; 12, yes.
Leer, Mich., July 18. EULAR THORNE,

Two years ago, 70 lbs. of comb honey per colony; a year ago, about 25 lbs.; this season, 45 lbs. clover honey, comb, per colony.
Pittsford, Mich., July 21. GEO. H. DENMAN.

I have taken off about 2000 lbs. so far, and hope and expect to get as much more—an average of about 20 lbs. to the colony — not more than half a crop. Basswood is gone, and clover is all dried up. We get no fall honey here.
Lapeer, Mich., July 22. R. L. TAYLOR.

1, fair; 2 very poor; 3, dryest in years; 4, we have all we shall get this year—about 20 lbs., extracted per colony; 5, better; 6, 25 per cent; 7, nothing last year; 8, extracted; 9, white; 10, 9 to 10 cts., extracted; 16 to 18 for comb; 11, nothing much to hold; 12, same.
Ronneby, Minn., July 19. J. E. HUGHES.

Bees built up strong on dandelion; are doing well on white, alsike, and sweet clover; 100 per cent better than last year; good local market. Merchants are paying 17 cts. cash for No. 1 comb; 12½ cts. for extracted in quart and pint Mason jars.
Stevensville, Mont., July 21. J. RIDLEY.

1, good; 2, unfavorable; 3, wet; 4, poor; 5, was not here last year; 6, one-fourth; 8, extracted; 9, light amber; 11, 6¾ cents; 12, slow.
Whiteville, N. C., July 23. F. R. JORDAN.

1, good; 2, favorable; 3, little dry; 4, fair; 5, better; 6, none harvested yet; 7, not taken off yet; 8, extracted; 9, white; 10, don't know; 11, early; 12, above.
Randolph, N. Y., July 11. GEO. SHIBER.

1, good; 2 and 3, very dry since June 10; 4, flow over; 6, 25 per cent; 7, about one-third this year as last; 8, mostly comb; 9, white, but slightly travel-stained.
Clarkson, N. Y., July 21. WM. C. HUNT.

Most of the bee-keepers report a very good season.
Syracuse, N. Y., July 22. F. A. SALISBURY.

Large crop of clover here. Bees are filling supers very rapidly. Honey has a finer flavor than usual. One swarm, hived June 27, on full sheets of foundation, filled hive and one super in ten days; second super is now full. Bees are now filling the third; sections 4x5x1½, one-inch starters.
RALPH T. PATTERSON.
Newark Valley, N. Y., July 17.

Nearly all the bees died in this locality last winter. White clover came out early, and was a fine crop. The hives are full now. Basswood bloom was cut short by dry weather.
Plattsmouth, Neb., July 21. J. M. YOUNG.

1, fairly good; 2, no; 3, drouth; 4, very poor; 5, very small percentage; 6, last year, 1 cap of honey-dew; this year, 1½ caps of dandelion honey and 2½ caps of clover; 9, white and light green cost 10 to 15 cts.; 10, yes, big demand. Bees are pulling out worker brood now; no flow of honey; are using up stores now.
Elk Creek, Neb., July 22. G. W. BRINK.

1, fair; 2, very unfavorable up to July 1; 3, wet; 4, not good; may be good fall flow; 5, not as good; 6, 7, none; 8, all comb; 9, light; 10, 17 cts.
Kitchen, Ohio, July 20. E. E. SMITH.

1, fair; 2, was good; 3, drouth at present; 4, average; 5, nothing but honey-dew last year; 6, 75 per cent; 8, mostly comb; 9, white; 10, 14 to 16 cts.; 12, yes, good sale; local markets will take all that is produced in this county.
Celina, O., July 21. D. W. HARKINS.

1, strong; 2, unfavorable; 3, wet; 4, very poor; 5, prospects for fall honey good; 6, 10 per cent; 7, 10 per cent; 8, comb; 9, slightly amber, and amber cappings; 10, 11, 12, no sales. Retail price here is nominally 15 cts. White clover, no crop.
Bladen, O., July 21. CHAS. H. CARGO.

It looks now as if the honey crop would be a complete failure in this section, as clover is gone and there is no basswood here.
Washington, Pa., July 22. S. B. POST.

The prospects for a honey crop in this locality are fine, having a good flow of honey from white clover.
Millheim, Pa., July 20. D. BREON.

Bees are doing about half as well as last year. April and May, too wet and cold; since then, too dry.
Lucinda, Pa., July 25. J. B. VOGELBACKS.

Bees were starving up to July 1; since then have averaged probably 20 lbs. per colony; seem to be working well now; cold and wet up to June 10, then drouth to July 15; since then, showers once or twice a week.
Marienville, Pa., July 25. J. E. GAUL.

1, good now; 2, good now; very bad up to five weeks ago; 3, suffered from cold wet rains in the early part of May; had freezing weather May 5 and 6; 4, not good unless we get it from fall flowers; 5, no honey off yet; had over 900 lbs. off at this time last year; 6, none; 7, no yield; 8, clover, wild spider, or cleome, goldenrod, etc.; 9, none yet; 10, none yet; 11, none yet; 12, none to move.
Marienville, Pa., July 19. H. H. HARP.

The honey crop in Tennessee will average just about half of a normal yield, although the quality is better than last year. There has been no report of honey-dew this season. Prices are firmer than at this time last year, with prospects for an advance.
Franklin, Tenn., July 22. J. M. BUCHANAN.

About one-fifth of crop. Extremely rainy until last week; very dark and unmerchantable. Poor location at best here for honey.
Chattanooga, Tenn., July 2. G. E. LEAVITT.

1, excellent; 2, favorable; 3, neither; 4, clover, phenomenal; basswood, poor; mullein and thistle too good; 5, about double; 6, a full crop already, and more too; 7, beyond comparison; 8, comb only; 9, colorless, the clover; mullein, dark amber, I think; 10, 11, 15 cts.; some are offering 12½, but are not getting any; 12, grocers are taking it because it is so good; but the weather is too warm for consumers.
Highgate Springs, Vt., July 14. C. A. SIBLEY.

No honey of consequence to date; but if weather is favorable there is a good prospect for a good fall flow.
Hot Springs, Va., July 21. S. D. RUTHERFORD.

1, good; 2, favorable; 3, wet; 4, very bad; 6, comparatively nothing; 7, about one-fifth; 8, comb; 9, white; 10, none on market; 11, 15 cts.; 12, would sell readily at 15 cts.
Emory, Va., July 21. B. F. CAMPBELL.

Here are conditions of bees in this neighborhood: 1, fine; 2, favorable; 3, no; 4, good; 5, much better; 6, about 30 per cent; 7, none last year from my bees in frame hives; 8, mostly or all comb honey; 9, white and amber; 10, about 12½; 11, I don't know; am selling mine at 15; but mine is comb honey; 12, mine is, don't know about others. Am now in the midst of mountain-mint flow. White clover is still blooming. Honey this year is of a *very rich* quality. I don't suppose I have a colony that will need feeding this fall.
Rapidan, Va., July 21. G. H. LATHAM.

1, good; 2, unfavorable; 3, extremely wet; 4, 5, 6, 7, all harvested; ⅓ crop; 8, comb; 9, red and white; basswood and poplar; 10, sold consumer, 15 cts.; 11, all sold; 12, never, in good year, enough to supply demand.
Miami, W. Va., July 20. JOHN D. THOMAS.

I have not extracted a pound yet, but some have a little surplus from clover. Buckwheat is not sprouting. This entire county is dried up. No honey-dew here.
Mauston, Wis., July 20. F. WILCOX.

1, good; hives full of bees; 2, very unfavorable; 3, from the worst and most prolonged drouth in 59 years; 4, in general, very poor; about half a crop; 5, the best colony my son had last year gave 300 lbs.; the best one this year, 130 lbs.; 6, none; 7, last year about 70 lbs. average; this year, 40; 8, farmers produce comb mostly; we, extracted; 9, white, and thick as glue; can hardly strain it; 10, not settled yet; 11, do not know; 12, none moving yet.
Wausau, Wis., July 22. G. A. LUNDE.

In the meantime we request our readers to continue sending in their reports.

Stray Straws

By Dr. C. C. Miller, Marengo, Ill.

Best clover flow I ever knew till drouth cut it short July 10. Will rain start it up again? If not, there will be about two-thirds of a full crop.

S. Farrington, does not your plan of preventing after-swarms by enclosing brood without any bees, p. 466, cause the death of the unsealed brood? You are wasting time to cut out queen-cells. The bees would see to that.

Le Rucher Belge, 52, copies a clipping saying that a hive-ventilator has been invented which saves the bees from fanning at the entrance, allowing them to go to the fields, increasing thus very much the harvest!

Dr. Carton, *L'Apiculteur*, 134, says the common notion that the food of the wax-worm is chiefly nitrogenous is all wrong. It is chiefly wax, perhaps altogether in some cases, as when working on sections. Metalnikoff's researches have shown that in the body of the bee-moth larva, especially in its blood, there is contained in abundance a very active ferment capable of digesting all waxy bodies.

Dr. Bonney, after your page or more of proof that a non-swarming race is impossible, is it not a fact that some bees swarm twice as much as others? The Dadants don't average one swarm from ten colonies. Now, if the kind of bees, or the size of hive, or any thing else can make so much difference as that, I believe continued effort may make still more difference, and I believe in going after that still greater difference, even if it breaks your law all to flinders.

R. Pincot reports, *L'Apiculteur*, 195, that he had a swarm weighing 6 kilos (13¼ lbs.), which left in the hive 94,220 cells filled with brood and eggs. So the queen, in the preceding 21 days, had laid an average of 4486 eggs a day. If she kept that up for twice as long, and if each bee lived 6 weeks, that would make 188,412 bees in the colony! [It has generally been stated in our text-books that a queen was able to lay as many as 3000 eggs a day. Possibly we had better revise the statement, and say that she *may* lay nearly 5000.—Ed.]

"Explain how he (Stewart) is square up against Alexander," p. 440. Certainly. Mr. Stewart gets the bees to clean out the *combs*, and Mr. Alexander was very vehement that the bees should not clean out a comb affected by American foul brood. He says, Gleanings, 1907, page 166, "I don't think that, up to the present time, there has ever been a comb that was affected by American foul brood cured of that disease. . . The reason why American foul brood has never been cleaned out of a comb is because a larva that died from that disease is so much like glue that the bees can not remove it in its soft state; and before it dries down. . . becomes a part of the comb itself, where it can not be . . . removed by the bees." [It is true that there is an apparent conflict between Stewart and Alexander; but you will notice that Stewart brings out the point that the colonies must be *very strong* in order to clean out foul brood—that an *ordinary* stock will not do it. He makes these colonies still stronger by stocking up over some of the combs already affected. When the good brood hatches out, a large portion of young bees is soon available. Alexander, on the other hand, apparently referred to ordinary colonies; and we all know that an ordinary colony will not remove the dead matter from the combs of American foul brood.

In this connection, perhaps it might be well to state that, if an extra-powerful colony removes the dead matter of American foul brood from the infected combs, so that said combs will allow good brood to be reared in them, there is quite a possibility, and even a probability, that, in a few years after, foul brood will develop again.—Ed.]

G. C. Greiner, p. 446, thinks the B. Taylor plan of getting unfinished sections cleaned out by the bees much better than the Miller plan. Each is best in its own place. I always use the Taylor plan when I can; that is, when I have enough bait sections to be cleaned out at one time. I spread the supers of sections over the shop cellar, and when all ready I open the cellar door for the bees. That's better than to have them outdoors, as a shower can do no harm. But if only a dozen supers are to be cleaned out by a large apiary the Taylor plan will chew the sections into little bits, and the Miller plan is away ahead. I do not find that the small passages excite the bees to stinging quite as much as the Taylor plan. [Now that European and American foul brood are spreading so rapidly over the country, it may be questioned whether it is wise to let all the bees in an apiary rob out a stack of wet combs from extracting or partly filled sections in this wholesale and indiscriminate way. If there were disease in one or more of the hives, nothing could spread it more effectually throughout the entire yard and other small apiaries in the vicinity than this wholesale robbing-out scheme.

For the benefit of beginners, foul brood or no foul brood, we ought to say that this scheme of cleaning up supers makes bees very cross for the time being. In a yard located near a common highway, or a line fence where stock is feeding or horses are working, it would be very risky to practice this clean-out plan. No one should attempt it except expert bee-keepers who *know what they are doing and the possible consequences.* Dr. Miller has been having European foul brood, and he probably will not take any chance of spreading what little disease he may have in his yard by having his supers robbed out either by the Taylor plan or by his own.—Ed.]

Bee-keeping in Southern California

By Mrs. H. G. Acklin, Glendora, Cal.

I am just beginning to get accustomed to hearing honey computed by the ton instead of by the pound. On asking a bee-keeper about his honey crop the answer comes quickly, "Oh! I took off — tons at the first extracting, and expect — tons next time." I sometimes wonder how a bee-keeper with a dozen colonies would answer.

I attended the Orange County Bee-keepers' Club meeting on July 2, and daughter and I were the only ladies present. Now, something is radically wrong; but I do not know where to locate that something. Bee-keepers, coax your wives to attend the conventions with you. Tell them you will take a lunch for dinner that night; tell them—but you all know what is best to say when you wish your wives to go somewhere with you. If you all do your duty in this respect the conventions will be more interesting. At the same time you must not forget to be present yourselves, as many of you did at the Santa Ana meeting.

NOTES FROM THE LOS ANGELES COUNTY CLUB MEETING.

The Los Angeles County Bee-keepers' Club convened in the Chamber of Commerce, Los Angeles, on the afternoon of June 4. Considering the infancy of the organization the meeting was well attended—probably half as many being present as the State convention called out. Interest and enthusiasm never waned for a moment; and even after adjournment people were loath to leave the hall. Several ladies were present, which always augurs well for the bee-keeping interests of a community.

W. R. Wiggins, Pres., and D. J. Shultis, Sec., were at their posts; and to the efforts of these two gentlemen is due, largely, the success of the convention. Mr. George B. De Sellem, Apiary Inspector of Los Angeles Co., was also present, giving helpful suggestions and advice when called on; also taking suggestions himself with a good grace. According to reports there is much work to be done along his line in this county. But just imagine the size of Los Angeles County! Mr. De Sellem expects co-operation in his work from all bee-keepers in his district.

Many subjects were discussed, preëminent among them being foul brood, which is always the case, I believe, when that problem has to be met. One gentleman has proven to his own satisfaction that the queen is responsible for that dread disease, and tried so hard to impress the convention with his arguments and conclusions that it became amusing and somewhat pathetic. Two papers were read, Mr. Brazen discussing "Counteracting Effects of Excessive Swarming," and Mr. Lind's subject was "Managing Bees in Dry Weather."

Initiative steps were taken regarding the entertainment of the members of the State organization, which meets in Los Angeles next winter—arrangements to be perfected at our next meeting, Sept. 3.

A trolley ride to Soldier's Home and a 3½-mile walk brought the writer to the apiary of Mr, C. C. Schubert, Sepelveda Canyon, Santa Monica Mts. The first part of the way led over high ground from which could be seen adjoining towns and the grand old Pacific; but as the road led us into the canyon it was like being encompassed about by gigantic walls on three sides. Bees were in evidence all the way, the roadsides along the cultivated fields being covered with wild mustard. On entering the canyon the little hummers were not as easily seen as heard, as the undergrowth is dense. There were many varieties of wild flowers in bloom, but not all accessible to the honey-bee. Some of the canyon apiaries are not as easily approached as one might imagine. This one had a padlocked gate half a mile or so from the bees. On nearing the apiary the sound reminded one of swarming time; but as we stepped out of the dense growth into the open space no swarms were visible. Mr. and Mrs. Schubert were there, but more for an outing than otherwise, as their bees were doing practically nothing. Those big empty honey-tanks had a hungry look, while many unused supers were stacked up, and the 275 colonies were barely making a living. Not enough rainfall in the early spring, and hot winds from off the desert, are the prime causes of this honey-dearth. The winds dried up the sages, which would otherwise have given part of a crop. We expected to find Mr. Schubert in the midst of extracting, and every thing bustle and hurry; so imagine our surprise when we found such quietness. This apiary may redeem itself later on, when the wild alfalfa and sumac come into bloom. Forage-plants are numerous on these small mountains. Buckthorn and wild lilac—both shrubs—come on in February, while the sages, *Cascara sagrada*, wild alfalfa, wild buckwheat, sumac, elder, and many other varieties of bloom are later. All of these plants, except the sages, yield an inferior honey. This particular canyon must be the paradise of swift lizards. They were gliding from under our feet along the road, and were even in the tent. While watching for flies, which they snap up with lightning-like rapidity, they let us touch them with a stick without moving. Mr. Schubert claims they eat bees also. Fortunately for us our genial host and his good wife were going home that evening, so we rode back to the car line. [In our Sept. 1st issue we expect to have some engravings showing Mr. Schubert's apiary.—Ed.]

Bee-keeping Among The Rockies

By WESLEY FOSTER, Boulder, Colo.

HONEY PROSPECTS.

From present indications there will be little surplus gathered in Northern Colorado this year. Late freezes, lack of water for irrigation, and grasshoppers, are the three main causes. The first growth of alfalfa has yielded scarcely any thing; and the colonies at this writing, July 7, have less than a pound each of stores. For about a month the bees have just held their own. Sweet clover and the second crop of alfalfa are the only available sources of honey, and unless these furnish a good flow soon the bees will have to be fed for their winter stores. So far this is the most discouraging season Colorado bee-keepers have ever experienced. Colonies are strong, and would soon be swarming if we could just have a honey-flow.

Bees in the Arkansas Valley in Southeastern Colorado are reported to be doing well, and it is not probable that the conditions in the northern part of the State are general.

BEES AS INVENTORS OF THE HIVE.

We are told that bees first appeared in the tropics, where they built their combs on the limbs of trees; but on finding out the advantages of more protection they took up their abode in hollow trees, crevices, in the rocks, etc. This change in manner of living shows a high form of animal intelligence, and is a high form of adaptive ability. Whether the bees took up the living in trees and rocks while in the tropics or developed this adaptive trait after moving into colder regions is hard to determine. We often see bees living out of doors with but very slight protection. A swarm of bees at Delta came from a hive in an apiary and lit upon a clump of sweet clover; and instead of leaving for a distant home they built their comb right there in the open with but very scant protection from the weather. They were entirely overlooked by the apiarist, and were not found till about Christmas. A few bees were still living, but the queen had disappeared. During the summer the leaves of the sweet clover protected the combs from the sun's rays, and they were melted but little. Apparently the knowledge of the need of protection from the weather is an acquired character of the bee; and when outside conditions are very favorable she will forget all that the past has taught her and will revert to old methods that suceeed only in the tropical "first home" of the species. Certainly bees that build combs in a sweet-clover bush have a very hazy notion of the rigors of winter. As a rule they seem to have a pretty good idea of protection during the winter; but whether they know just the nature of it would be hard to determine. Certainly what they know from instinct is often lost when they revert to a still more primitive instinct by building in the open air. If we take this view of the acquirement of the trait of the bee in seeking the shelter of a tree or rock we shall have to say that the bee herself is the inventor of the hive. Did she do this in the tropics to gain for herself shelter from rain, the sun's rays, and perhaps from other insects? Or did she have to encounter the rigors of northern winters before she saw the advantage of more protection? We shall have to admit that the bee is somewhat of an inventor; for is it not a sign of adaptive and inventive genius that she will take the comb foundation we give them and build comb upon it?

SWEET CLOVER.

Some of the possibilities of sweet clover as a honey-plant and forage crop may be gained from the report of the conditions in some of our mountain cañons. The streams from which our irrigation water comes flow out of the cañons; and in order to get the water as high as possible on the plains it is taken some distance up the cañon and carried in ditches and flumes around the sides of the cañons and thence out on to the high ground of the plains to be irrigated. Sweet clover has been sown along these ditches by bee-keepers, and the seed has not only started up a fine growth along the ditch-banks, but wherever the banks have overflowed the sweet clover has gained a firm stand. Further than this, the clover has followed up some of the damp ravines and along the main beds of the larger streams, making an abundance of find bee pasturage; but, what is of more real value, it enhanced the worth of this waste ground in the mountains as a pasture for cattle. Many cattle are now kept in the mountains, and the feed is good most of the year; but the addition of sweet clover to the pasturage makes it doubly valuable. In time it is quite probable that these mountain sweet-clover pastures may be profitable fields for the bee-keeper.

Here is a further high endorsement of sweet clover as a ration for stock—sheep this time. It is especially valuable, as it comes from Prof. Morton, of the Colorado Agricultural College, an expert on the feeding of sheep. I clip what he says from an article of his in *Ranch and Range.*

> Many people think sweet clover is useless, but they are mistaken. Not only will stock pasture upon it, but they will eat the hay from it readily if it is cut early and well cured. The writer has fattened lambs upon sweet-clover hay and corn, and found the combination almost equal to alfalfa hay and corn. I distinctly remember the first time I fed sweet-clover hay. I had a bunch of range lambs upon native hay. I threw in a forkful of sweet-clover hay that was very stemmy, and bleached. The lambs started for it; and as soon as they got a taste of it they almost piled on top of one another in their eagerness for it. It was amusing to see a sixty-pound lamb start in on a stem as big as one's little finger, and chew at it until he finished it. Previous to that time I was somewhat skeptical as to the value of sweet-clover hay, but I became convinced.

Notes from Canada

By R. F. Holtermann

125 CARLOADS OF HONEY ANNUALLY.

I must confess I feel curious to see the invoices for such a large purchase of honey by one concern, page 404, July 1.

FROSTED ALFALFA.

Wesley Foster reports frosted alfalfa in Colorado in the middle of May. We had the same here when other clovers did not appear to be damaged.

LAYING WORKERS.

Endorsing the statement of Dr. C. C. Miller, page 404, Holy Land and Cyprian bees, I believe, generally develop laying workers much sooner than Italian, Carniolan, and black bees; yet laying workers *will* develop among the three last-named varieties.

COLONIES STRONG TOO EARLY.

So Dr. Miller, on page 404, suggests that Doolittle and Holtermann should "settle the question whether a colony can be too strong May 1." Well, if I should be spared that long I am willing to prepare an article for Gleanings defending my views, and let friend Doolittle do the same; and as Dr. Miller appears to be "on the fence," let him umpire the debate.

DOES THE QUEEN DESTROY QUEEN-CELLS?

Many times I have heard the statement made that the queen destroys cells which might produce rival queens. My youngest son, Glenelg, lately stocked an observatory hive with a comb of brood, bees, and several queen-cells. After the first cell hatched, the *bees*, not the queen, tore a hole in the side of the cell. I must confess that all I know about it is hearsay.

SOUR HONEY.

Supposing sour honey came in contact with well-ripened honey, could the germs of fermentation effectually act on thick well-ripened honey, or would the honey first have to become thin before it would ferment? Of course, I want to make it impossible for the honey to absorb moisture from the atmosphere until it becomes thin. Now, do not let some one answer this question by telling me it is unwise to run the risk.

ITALIANS SWARM MORE THAN BLACKS.

Under this heading, W. C. Mollett, page 286, May 1, has an article. There may be some peculiarity of locality which makes this the case with Mr. Mollett; but my experience, provided room is given to the bees when they need it, would incline me to believe the Italian bees are *less* inclined to swarm than the blacks. In the term "blacks" in this case I would include the Carniolan bees.

THE SEASON.

Reports from various sources indicate that in Canada generally the bees have not been in the best condition to take advantage of the opportunity for nectar-gathering; and unless the flow is prolonged by recent rains the yield per colony will not be as great as last year. My best colonies have so far not done as well as last year, and the average yield per colony is not likely to be as great. I believe that my bees were in as good condition as last year; but the flow has not been quite as good.

ATMOSPHERE AND NECTAR SECRETION.

Mrs. H. G. Acklin, page 405, appears to doubt that atmospheric conditions have any thing to do with a good or poor honey crop in California. I can not speak for California; but in Canada, to which so many of our United States neighbors are now coming, the atmosphere may spoil the best prospects otherwise for a good honey crop. On Sunday, July 3, the atmosphere was muggy, and the bees worked with a will; then somewhere there was a clearing storm, and, though we had no rain, on Monday morning all was quiet among the bees, the atmospheric conditions having changed. Before the middle of the week we had high temperature and a moist atmosphere, and nectar secretion and gathering was again the order of the day.

THE SPREAD OF FOUL BROOD.

"If Mr. Woodley be correct in blaming the present generation—and his words seem to imply that—for the wholesale spreading of bee diseases, then by all means let us in this country stop and hand down the industry to our sons and daughters free from this reproach cast upon the present generation by Mr. Woodley." So says the *British Bee Journal*, page 189. In my estimation there is no doubt that modern methods of bee-keeping tend to the spread of foul brood. Frequent manipulations of the brood-chamber, robbing, due to the exposure of brood and extracting-combs, the honey-extractor, the taking of brood and combs from one stock and giving them to another, and the length of time combs are now kept when compared with the "brimstone" method of getting honey, all these tend to the increase of foul brood. Again, our present facilities for transportation of honey and bees tend to the spread of this disease, just as it has tended to the spread of weeds, insect pests, fungi, and parasites. In my estimation there is a system of bee-keeping suitable for an expert who devotes his whole time to the business which it is unwise to graft on to a person who has neither the time nor experience to develop with success.

Conversations with Doolittle

At Borodino

A HARD BUT VICTORIOUS FIGHT WITH ROBBERS.

After what you said in the last issue I thought I should be able to get along without allowing my bees to rob again; but in spite of all I could do they got started on two colonies. Have you ever had any experience with robbers besides that mentioned?

Some years ago I had a siege of robbing that was so bad that I feared the whole apiary would be ruined. It was during a hot time in August, when there was no nectar coming in from the fields, and I could not open a hive, not even one of my queen-rearing nuclei, without robber-bees swooping down like a swarm on to the combs. If there is any thing in the business that makes a man feel like giving up it is having robbers hovering all day long about every hive in the yard that they think there is a possible chance to get into. The heat, day after day, was intense—just the condition to put all the vim possible into a robber. At that time I was often sending out from twenty to forty queens a day, and you can imagine the situation was enough to give me the blues.

The matter of the queens was the most difficult of all, for I could not lift the cover from a nucleus before a host of marauders were ready to pile in on to the weak little colony hardly able to defend itself when not disturbed.

My wife asked me why I did not use the bee-tent; so the next morning I had it all ready before the sun was up; and after breakfast I started to put up queens that should have been sent three days before. I no sooner had a nucleus open than the robbers came on as before; but the tent held them away from the combs till it seemed as though there was a small swarm about it. However, I could now go on putting up queens, while without a tent I could not work at all except before sunrise and after sunset—the most unpleasant time of the whole day to work with bees, especially during a honey-dearth.

I thought the tent would stop all the trouble, for it held the robbers at bay while the hive was open and the queen was being caged; but after closing the hive and removing the tent, the bees from this nucleus which had been kept outside by the tent, flocked in at the entrance; and as the guards had left their posts while I had been at work, the robbers, of course, went in with them. A fight always ensued, which, in the case of the weaker nuclei, would have resulted in victory for the robbers had I not promptly closed the entrances. Never before had I seen robbers so determined and so cunning. They would hover all day long at the entrance of a nucleus hive, five and even ten at a time, and alight with fanning wings as tired bees do after being away a long time, and in this way they would get past the guard. On this occasion I saw the robbers doing something that I had never seen before, nor have I seen it since. When some of the guards caught a robber, other robbers would catch hold also and tug away at the legs and wings until the bee got away, when they would whirl around as if looking for another robber, and then run into the hive. In this way they worried the guards of the smaller nuclei and kept me on the jump all the while.

But finally I learned how to overcome the difficulty. This is not new to the older readers, for I have mentioned it before. By carefully watching I found that, when a robber slipped by the tired outside guard, that robber would be led out by one of the inside guards. This set me to thinking, the result of which was a change of arrangements of every nucleus and weak colony. Up to this time the entrance to each hive was directly in front of the comb. Now, as fast as I opened a nucleus hive I took the frame having the most honey and set it clear to the opposite side of the hive from the entrance; then the frame having the next greatest amount, a bee-space from it; and the frame having the most brood in it next to that (I generally use three frames to a nucleus), and then put in a division-board and closed the hive, leaving the entrance on one side, while the nucleus of three combs was on the other side. If a robber succeeded in slipping by both the outside and inside guards it still had to travel over a foot of space all along which were scattered guards ready to seize it; and if the robber did get by all these guards through stratagem, it first came to the division-board and then to a comb of brood which is far better protected from bees than any other part of the hive. The result was that, although robber bees still hovered around, no colonies were robbed out, and no nuclei or weak colonies since that time have ever been robbed out if there were enough bees to protect the combs at all.

How to Protect Empty Combs from Moths.

I intend to stack up brood-chambers filled with empty combs, six stories high, making all the cracks as tight as possible, for the purpose of fumigating with carbon bisulphide. Please tell me about how much of the liquid I need to use at each application, and how often I shall need to renew it to insure the best results.

Paducah, Ky. Wm. Janes.

[After fumigating, if you leave the combs stacked up just as they are, making sure that all the joints are tight, there is probably no reason why you would need to repeat the work, provided that your carbon bisulphide is as strong as it should be. If you get it in the sealed package, and do not let it lie open on the shelf for some time, one treatment, we think, would be sufficient. Place about half a pint of the liquid in a very shallow dish over each stack of frames, covering every thing up on top, so that no air can get in. The gas is heavier than air, and falls, therefore completely filling the whole tier of bodies.

To be on the safe side it might be well to make an examination of one of the sets of frames after 48 hours, and if you see any signs of life at all in the shape of moths that are not dead, repeat the fumigation.—Ed.]

General Correspondence

THE FLIGHT OF QUEENS AND DRONES.

BY SAMUEL SIMMINS.

There are many apiarists who claim that their breeding-yards are isolated to a great extent, and some believe that a radius of from one-half to one mile free from other bees will provide a clear flight for fertilization, in most cases by the drones of the same yard. However, for securing vitality and increased productiveness in a strain of bees the above is not the point of most importance to be considered. There is nothing short of a mountain range that will restrict a strong-winged queen to half a mile, and many a hardy queen will extend her perambulations from two to three miles. This distance we must about double in anticipation of far-off drones meeting the queens. The same rule applies to the flight of the drones, and it is only by insuring hardy, virile males in great numbers that one can rely upon securing a large percentage of queens mated as desired within a reasonable distance of the apiary.

THE OTHER SIDE OF THE QUESTION.

But suppose a breeder claims to get most of his queens mated correctly where there are many mongrel bees within a mile of his yard. It is quite possible that this fact explains that the queens may not be hardy or strong-winged, and, above all, if his drones do not soon change the color and markings of those mongrel bees within the mile radius this would seem to be a proof also that the breeder is wasting the time and money of those who purchase bees and queens of such a strain.

It would be a difficult matter for me to find a stray colony of native bees or mongrels within a mile of my own apiary, which apiary is also surrounded by high trees; but I find that my drones have made an impression upon native bees at a distance of 1½ to 2 miles from an apiary; but even with crowds of such drones flying, I can not claim to be quite free from occasional mismated queens, and I am well aware that those drones reared are capable of flying five miles or more if occasion required.

Consequently, if one is using or testing a queen whose daughters almost invariably are mated correctly, and apparently within a short distance of the apiary, he should consider seriously whether these queens may not be delicate or weak in wing power. This being the case, no matter how prolific her daughters may be, it is possible they will not exhibit in their worker progeny that longevity, stamina, and industry required in a good strain of honey-gatherers.

I have now presented both sides of the question, showing that an apiary is not always strictly isolated simply because the owner considers that he secures correct mating. He may, instead, be merely perpetuating a weak strain of queens and bees that will never show any decided improvement toward extra results in honey-gathering, though he may secure high color (another sign of weakness), and prolific breeders. It may be taken for granted that, the more yellow the workers produced, the more delicate and the more useless they are; but a clearly defined three-banded bee may certainly be produced that will be equal to any for honey-production. As soon, however, as the color of the workers runs—one band into the other—such as five-banded or golden-to-the-tip workers, the breeder has exceeded his legitimate vocation, and is offering that which is a practically useless article.

There are many apiarists who have invested in beautiful extra-golden queens only to find that their honey-yields are reduced to an unprofitable margin, and these enthusiasts are often inclined to disregard the superior advantages of the darker Alpine Italians. Even the latter, as is well known, require a great deal of selection and care expended on them before the highest type of hustlers can be secured, while the same careful process is necessary before one can insure uniformity in color of queens, and it frequently varies from orange to black among those imported.

DO BEES CARRY EGGS?

In further reference to this subject I notice the reported case of a queen-cell being found above excluder zinc, page 710, Nov. 15. Your correspondent does not say he allowed that cell to hatch. It may have been from an egg deposited by a worker, but it is unfortunate for the theory under consideration that Mr. Rigg did not await the proof.

In your footnote, after repeating your former impression relating to the supposed egg-carrying propensities of bees you refer to apparent proofs that hopelessly queenless colonies have developed a genuine queen of a race different from the bees of the hive. I should be among the first to admit any substantial proof that bees do carry or steal eggs; but it has not happened in my own somewhat lengthy experience, though I have found many cases that might be mistaken for such occurrences.

If the progressive stages have actually been observed from the egg onward to the final development of a perfect queen in a hopelessly queenless colony, then, of course, one must admit the exception as referred to in your footnote, page 781, December 15. We must not forget, however, that it is a common occurrence for a young queen failing to notice her own hive or nucleus to enter a queenless colony after successfully mating. Is it not possible, therefore, that some may have jumped to erroneous conclusions in such cases? The capped queen (?) cell may have continued up to the supposed hatching-point, and then the advent of the wandering queen would apparently afford the required proof that bees do steal eggs.

Heathfield, England.

HOW TO PRODUCE A TRULY FANCY GRADE OF EXTRACTED HONEY.

BY LEON C. WHEELER.

It has been said that the first requisite for fine extracted honey is new combs; but while this might do for some, I go a step further and use nothing but foundation. There is not a comb in my yard over three or four years old, and yet there is a very noticeable difference both in color and flavor between the honey taken from these combs and that taken from combs just built. I believe honey is often rushed into drawn combs so fast that it is capped over before it has time to evaporate thoroughly, as it should.

Some may wonder whether it is not pretty expensive to use so much foundation. I figure in this way. Full sheets of thin brood foundation for a ten-frame hive will cost about 55 cts. About 35 lbs. of honey can be extracted from such a hive when full, which, if handled right, will bring from three to five cents per pound more than the average grades of honey. Suppose this difference to be three cents, we have $1.05 to overbalance the 55 cts. for the foundation. Then we still have the combs left, which may be used for two or three years for the standard grade of honey. In putting these frames of foundation in the hive I alternate them with drawn combs, and I find that the bees lose very little time in drawing them out and filling them.

When I extract I separate these newly drawn combs from the others, and extract them by themselves. Then I again sort all of the combs left, taking out any which, by any possible chance, might have a trace of darker honey in them, and also even some of the darker combs which contain nothing but light honey, but which may have colored the honey slightly. This process insures very fine honey for the next best grade, and the combs left are now extracted and the honey sold around home to those who wish a fair grade of honey without paying so much for it.

There is one more advantage in this way of handling honey. Every time any of the extra-fine honey is sold it immediately begins doing free advertising.

Barryton, Mich.

[There is probably no question that the very finest honey is secured from virgin combs; but it seems to us that there is some room for argument as to how far it pays to carry out this plan. Perhaps not all bee-keepers would be able to get three cents a pound more for honey produced in this way than that produced in good average drawn combs. Then, further, some honey would be consumed in the process of drawing out the foundation. Virgin combs, moreover, are difficult to extract without breaking. When visiting a bee-keeper recently we saw beautiful clover honey, light in color and exquisite in flavor, that was being extracted from old brood-combs that were nearly black.

We are not bringing up these arguments to dispute the points made by our correspondent, but simply to show that there may be a difference of opinion. We should be glad to hear from others on this point.—ED.]

A BEGINNER'S FIRST SEASON.

BY C. C. PARKHURST.

After becoming interested in bee-keeping I subscribed for GLEANINGS, then secured the A B C of Bee Culture. I first bought two Danzenbaker hives complete in the flat, with smoker, veil, gloves, etc. I had arranged with a farmer to let me have the first swarm that came off, so one of my new hives was left with this farmer, in which the swarm could be placed when it issued. About the close of the white honey-flow I received word that the bees were ready for me. This one colony I succeeded in getting in good condition for winter by stimulative feeding, as the season of 1907 was a poor one, there being only a very light fall flow. I will not go into details to tell how many times I had this hive open with the frames leaned up against it at different angles, or how I came very near losing some of the combs by exposing them to the hot sun too long.

I packed the colony for winter by taking out part of the frames and placing cushions at the sides, made of forest leaves. Then I put an empty super above the brood-chamber, which I filled with leaves. The entrance was contracted to a space $\frac{3}{8}\times 3$ inches, with a board leaning against it. As the winter was mild the bees had numerous cleansing flights, and came through the winter dry, clean, and ready for business. They were carrying in some pollen on the 27th of March, and, during fruit-bloom, cast a swarm. This was the spring of 1908.

Having been successful so far I wanted more bees, so I bought five colonies in old Langstroth hives of a farmer who had more than he wanted to keep. I brought these home one evening about the 20th of April and placed them on their new stands. About this time I ordered ten divisible-brood-chamber hives with the idea of transferring the bees from the old hives. When these came I nailed them up and put in full sheets of foundation, both in the brood-frames and in the sections, using a full-top starter, and also a narrow bottom starter in the sections, according to Dr. Miller's plan.

Before fruit-bloom, which was late on account of the backward spring, I hunted up the queens in all the colonies and clipped their wings; and it was no small undertaking on account of the old crooked combs, some being built across from one frame to another. At this time I did a very foolish thing. I took a frame of brood from each old hive and cut out a piece to fit in the new frames, putting just one frame of brood in

each new hive, placing the new hive on a queen-excluder over the old hive, with the queen released on the frame of brood after her wings had been clipped. I did this, thinking I would get the bees at work above. I was very much mistaken, however, as there was no honey coming in, and what I did practically stopped egg-laying, the foundation above being left untouched. I did not know what was the matter, and I began to think that these bees were a very stubborn lot; but I left them in this way until during fruit-bloom, when all the brood below had hatched, and then I took a brood-comb, put it in a shallow hive on a bottom-board at the old stand, filling up the hive with full sheets of foundation. I then took the section that the bees had been occupying with partly drawn combs at this time, and put on top of this first one and drove the bees from the old hive into these two bodies thus prepared. I did this with each of the old colonies, and then closed up the old hive so the bees would not rob out the honey left in the combs. The bees went to work with great energy, although they were not as strong in numbers as they should have been. This experience, then, was rather expensive.

The colonies now built up rapidly, as the weather was favorable, and only a few days between fruit-bloom and locust-bloom. The locust furnished some honey, and was shortly followed by clover, which yielded abundantly. As soon as the clover flow began I raised up the top brood story and placed comb-honey supers between the two stories. They were left in this way for two days, so that work would be started nicely in the sections, and then the supers were put on top of the two brood-sections. Some of the sections were badly plugged with pollen, and had to be sold for 2 cts. less; but on the whole I secured a nice lot of honey that many people praised highly.

The flow was of long duration; and when some colonies slowed down in the work and commenced loafing I removed the supers without disturbing the bees in them; then I smoked most of the bees down out of the top brood-section, so as to be sure not to get the queen; then this top section was set aside to be used for increase later, and supers put back on the lower sections. After this I blew a few puffs of smoke at the entrance to drive the bees up off the bottom-boards, and then lifted off the whole lot and placed brood sections with full sheets of foundation on the bottom-boards, putting back the former lower brood sections and supers over them. More smoke was then blown in at the entrances, and the work was done. In this way I induced each colony to give a good account of itself, and this seemed to check swarming at the same time, as I had but two swarms during the clover-flow, and all had increased to rousing colonies.

My first swarm I united with a colony that was not doing very satisfactory work in the sections, and the bees were accepted without any fighting. My plan of uniting was to shake out a few bees from each lot, mix them up, and allow them to run in together. My other swarm was hived on a new stand. At each instance the queens were easily found, running about near the hive, as they had been clipped.

At the end of the white honey-flow I had eleven colonies. About that time I sent for six untested Italian queens, as my bees were blacks or hybrids, and three of these were used to replace old queens, and the other three used for making increase. To make the increase I took one brood section from the strongest colonies, being careful not to get the queens, and gave these strong colonies a section filled with full sheets of foundation instead. The new colonies were smoked to cause the bees to mark their new location, and a queen was introduced to each in the mailing-cage. The entrance of each new hive was contracted to a small space to prevent robbing. The queens were accepted with one exception, and I bought a strong colony from a neighbor and united it with this queenless colony in the fall. This time I placed a sheet of paper between the two bodies and drove the bees from the hive I had bought into the lower section.

The new colonies and the divided colonies were left mostly to themselves after dividing until the buckwheat flow, which gave some surplus. Then super room was given to each that I thought was strong enough. After the buckwheat the next main source of supply was the goldenrod, which was abundant in many fields, and furnished considerable honey. This did not cease entirely until nearly the first of October. As we had a late fall, with no killing frost up to this time, I decided the bees were storing no more honey, and so I removed all the supers with Porter bee-escapes. After removing the honey, I sorted, scraped, and packed it as soon as convenient and placed it on the market. After figuring up I found I had taken off just 581 sections of marketable honey that were sold at 12 to 15 cts. each, with the exception of some that were given away, and also what we used ourselves and what we kept for winter. Honey given away to neighbors is a very good investment, as such neighbors tell others about it, and the number of customers is materially increased.

After taking off the last honey I commenced preparations for packing for the cold weather. I took three frames out of each top brood-section and put chaff cushions at the sides. Then on top I put an empty super, and filled it with chaff or leaves. All the hives were very full of honey and pollen, there being in some of them more pollen than I thought the bees would ever need. I did not want to leave so much in the hives, but did not know how to get rid of it.

In the future I intend trying some easier method of packing, as it is too much work to make cushions and pack them. Then the frames that are taken out must be stored away and looked after as well as the other

inside fixtures and the supers. However, the next spring the bees were in good condition.

Garrettsville, Ohio.

HOW MANY SETS OF EXTRACTING-COMBS ARE NEEDED PER COLONY?

A Discussion of Some of the Plans in the Alexander Book.

BY HARRY LATHROP.

Early this year I purchased the Alexander book, and read it and reread it carefully. On the whole I think it is one of the most valuable books on practical bee-keeping that I ever got hold of; but in some points it needs severe criticism. His instructions regarding spring feeding, production of comb honey by using the feeders to supplement the flow from the fields by feeding back thinned honey at night, and his directions for making increase, are very valuable. On the other hand, he advocates operating an apiary for the production of extracted honey by the use of one extracting-super per colony. I have advocated abundance of store combs and the tiering-up plan. I should like to discuss this point because it does not seem possible, in a white-clover locality, to secure anywhere near the maximum yield by Mr. Alexander's method—at least if well-ripened honey is desired. Take the situation in my yard at present, for instance. The colonies wintered well and got a fine start in March and early part of April. Then during the cold weather of April and May, and on to the opening of white clover, I fed carefully so that, when the white clover came out in bloom, the colonies were strong in bees with brood-chambers full of brood and no honey. I promptly put on every hive one set of extracting-combs. The honey, in such a case, comes in with a rush. Now, I can tell unerringly just when a colony needs an additional set of combs by the little bunch of bees that gather on the front of the hive. As soon as I notice this I give another super under the first and next to the excluder. The first super is two-thirds full, and the bees are beginning to seal along the tops of the combs. But that honey is not ready to extract; it is not ripe, and if I had no other set of combs to furnish room I could not wait a week for the first super of honey to be finished, without losing heavily. When the upper super is ready to extract, the lower one will be nearly full; and the usual plan is to extract the upper one and return the combs, placing them in turn next to the brood-chamber. I have had a long experience in manipulating these extracting-combs, and I must say experience has taught me that I want plenty of them.

Suppose a bee-keeper has a lot of colonies with one super each, just about ready to extract. He goes to each hive and selects three of the ripest combs and extracts them, thinking that this will give the bees room for a few days until he can get around to extract the remaining combs. A few hives are treated differently, in that the whole set is extracted. Now, when he comes around the next time he finds that the bees that had a full set of empty combs have filled them as full as the others have filled their three combs, thus showing a heavy loss on the part of the latter. I have three sets of full-depth extracting-combs for each working colony. I think I could get along with two, but would never try to get along with one as did Mr. Alexander.

There are two things that Mr. Alexander did that we don't do: he practically overstocked his field so that the honey would not come in so fast, and he sold his honey mostly in bulk to dealers in the city. I sell mine direct to consumers—have worked up a good reputation, and do not want to lose it by extracting green honey, which I should have to do if I tried to run an extracting-yard with only set of store combs per colony, or else lose a large part of the crop. Mr. Alexander's yield was mostly from buckwheat, of which we have very little. His situation was different from many, and most of his advice is so valuable that, in some other things, he might mislead any one with a location similar to ours. There are a few other men who advocate extracting honey before it is ripe, and resorting to artificial methods of ripening; but they are being voted down by a large majority of the practical honey-producers of the country.

ALLOWING THE COLONIES TO REQUEEN THEMSELVES.

Another question I should like to touch on: Mr. Alexander and some others advocate purchasing or rearing queens for wholesale requeening. In our apiary we practice clipping the queens each spring. When clipping-time comes we find that only about ten per cent of the queens have clipped wings. Does not this indicate that the queens were superseded the previous autumn? It is claimed that the best queens are produced by superseding; then why buy queens in order to avoid having queens over two years old? Strange that some things stand out as being of such great importance to some practical men, which things do not seem to be any part of the problem of successful honey production to others. I like to have young vigorous queens of good breeding, and do purchase some fine queens from the breeders of best reputation; but when it comes to a good honey year, the blacks and hybrids of the yard, especially those persistent blacks, are right there with the goods, producing as much honey as the best-bred stock.

Bridgeport, Wis., June 23.

Silverhull ahead of Japanese Buckwheat for Honey.

Japanese buckwheat is not reported as the equal of silverhull. I have sown silverhull with good results. The bees do not work on the Japanese. I intend to use the silverhull entirely.

Lincolnville, Me. Fred Brewster.

CITY APIARY OF CHARLES H. GOODELL, WORCESTER, MASS.

KEEPING BEES IN A CITY.

BY CHARLES H. GOODELL.

I live in a city of nearly 150,000 people. My lot is 120 feet in front, 150 feet deep, and about 50 feet across the back. I have kept bees in the rear part of it for many years, and also have kept several colonies summer and winter in a gable in my attic. There are gardens all around. One can see in the picture how near the houses are, and also the neighbor who is hoeing corn just beyond the fence which forms the boundary between us.

It is of the double-brood-chamber hives that I write especially. They are made up of regular deep supers, with the cover of a wintering-case on top for a shade-board. The one on the right had two bodies filled with ten frames each, and three supers, and from it I took 71 lbs. of honey; the other, at the left, had two bodies filled with frames and two supers, and from that I took 46 full sections. The season for surplus was short and poor.

I put a gray Carniolan queen in the upper story, and an Italian queen in the lower story of the hive at the right, with an excluder between them, and the black and yellow bees worked together throughout the hive during the summer. I hatched a yellow queen in the upper story of the hive on the left of the picture, and then put her in the lower chamber to be mated. I put paper between the two chambers, with an entrance for both stories, until she was laying, to keep the virgin queen from going through the excluder to the other queen. I had two queens in each hive after July 1.

I am a lawyer, and studying or experimenting with bees has been my diversion. I also organized and am now secretary of the Worcester County Bee-keepers' Association, the largest and most influential body of the kind in New England. Our president, Mr. John L. Byard, recently carried a queen-cell in his pocket from Chesterfield, N. H., to his home in Marlborough, Mass., where it hatched in due course.

Mr. O. F. Fuller, of Blackstone, one of our members, has established the Fuller system of queen-rearing at the Massachusetts Agricultural College at Amherst. By his system he raises queens in one half of a ten-frame Langstroth hive, while the queen is laying regularly, and the workers are rearing brood in the other half and storing surplus in the super above, they having access to the whole hive through queen-excluding zinc placed vertically in the middle, and being fed abundantly when there is no honey-flow.

I am using the double-brood-chamber hives again this year. Mr. Fuller recently sent me some queen-cells by mail. I was not in my office when they were delivered, and the postman threw them over the transom. I put one in my queen-rearing nucleus; and next morning I found a handsome queen had hatched. I put another in the upper story of a hive, with excluder and wire cloth between that and the lower story in which the queen is, and that cell also hatched out in good time. We have demonstrated that queen-cells will hatch after being sent for some distance and subjected to rough usage in the mails.

Worcester, Mass., July 11.

[We are fearful that your experiments in sending queen-cells by mail will end disastrously, for unless the weather is extremely warm there is the greatest danger that the queens will become chilled so that they will not develop perfectly. Our Mr. Bain says that, since the wings form about the last, the queen is likely to emerge without wings at all if the cell is subjected to a cooler temperature than that of the hive.—ED.]

DR. E. F. PHILLIPS INSTRUCTING THE NURSERY INSPECTORS OF OHIO IN THE ART OF BEE INSPECTION.

By the new State law the State Entomologist is the bee-inspector who, with his deputies, has charge of the work throughout the State.

FOUL-BROOD INSPECTORS AT WORK IN OHIO.

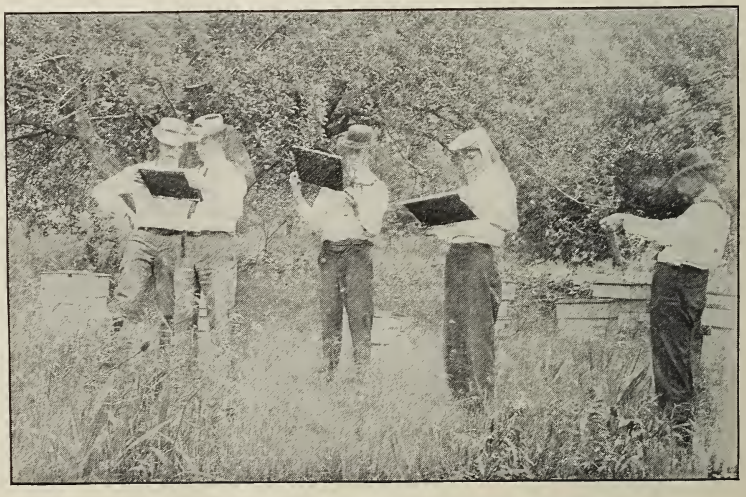
BY E. R. ROOT.

As our readers probably know, Prof. N. E. Shaw, State Entomologist in the Department of Agriculture, Columbus, Ohio, is now our State foul-brood inspector under the new law. He already had a corps of six or seven men doing nursery-inspection work, and these have since been trained to do inspection work among the bees.

Some few weeks ago, State Inspector Shaw, along with his deputies, met with Dr. E. F. Phillips, of the Bureau of Entomology, Washington, D. C., at Medina. Dr. Phillips took them through our bee-yards and showed them colonies in normal condition. We then drove in an automobile to some points about 25 miles distant that we heard were infected with disease. We found a couple of yards where American foul brood was making fearful havoc. While Dr. Phillips was giving his instructions how to diagnose and treat, we took occasion to use the camera, and the subjoined views show the inspectors at work.

Prof. Shaw and his deputies are university-trained men, and it was not difficult for Dr. Phillips to instruct them in the way of diagnosing bee diseases, for they readily "caught on."

Since that time they have been busy in various sections of the State. There are some six or seven of them, and when it is understood that they are doing nursery-inspection work as well as bee-disease work one can readily see the economy to the State at large. There is no reason in the world why the function of nursery and bee-inspection work can not be combined in one man, or, as in this case, in several of them. One does not require to have a practical knowledge of the art of handling bees to be an inspector; but under an expert like Dr. Phillips, especially if he is a college man, he will readily catch on to some of the marked symptoms of disease. In any event, all doubtful specimens of brood are



STUDYING THE SYMPTOMS OF THE DISEASE.

referred to the Bureau of Entomology for examination.

Ohio probably has one of the best foul-brood laws of any State in the Union. A law that provides for an appropriation of only $500 and one inspector can not accomplish a great deal. Every State really ought to have a corps of seven or eight men. It reduces railway travel and hotel bills when the functions of the two lines of inspection work are combined in one.

Indiana has an excellent law, probably as good as Ohio. Several other States are beginning to appreciate the value and the importance of making the State Entomologist, foul-brood inspector. The State Entomologist, a trained scientist to begin with, has at his command stenographers, clerks, and an office, and it is possible for him to keep a record of all disease-infected areas and to give advice by letter as well as in person. It is our judgment that all laws in the different States should be modeled somewhat after the one of Ohio and Indiana. They were originally drafted by Dr. E. F. Phillips, who, after a very careful study of the general conditions, decided that bee-inspection work naturally rested with the State Entomologist.

MAKING SURE OF SOME DOUBTFUL CASES.

SHALLOW VS. FULL-DEPTH FRAMES.

Is the Divisible-brood-chamber Hive all that has been Recommended?

BY T. P. ROBINSON.

Although I have the highest esteem for Mr. Louis H. Scholl, I have very little use for shallow supers, at present at least. Louis and I are good friends, but I think it is amusing to see how careful he is not to tell us how long it takes him to can one thousand pounds of honey ready for shipment. Taking the honey off the hive is the smallest part of the work. Cutting it from the frames, putting it into cans ready for shipment, and then fixing the supers for further use is where the rub comes.

We have some of the shallow supers, and consider them a perfect nuisance. The bees have a way of sticking them up to a fearful degree, and just as soon as we begin on them the extractor practically runs dry; in other words, we get honey only about half as fast as with the full-depth frames, for it takes just as long to handle a shallow frame as a deep one; and the man with hired labor, who values time, can not fool with these shallow combs.

I have a record to submit to our "6 ft. 2" brother, which modesty has kept me from making public until now, but for argument's sake I will mention it. One year during the latter part of August we were taking all the surplus honey from our hives. We had gone through all the apiaries except one that was fourteen miles away, and we reached this yard with our equipment and four helpers, Mrs. Robinson being one of them, whose particular work was the uncapping. I took a man in the yard with me to help, and to haul the honey to the tent; and in a short time we had the tent full of honey in full-depth frames and all hands started at the extracting. In seven and one-half hours the whole yard was extracted clean, all supers back on the hives, the bees in first-class working order, the honey canned, crated, and ready for shipment, with nothing left to do except to go home; 3500 pounds of extracted honey was the result, besides the cappings, which were heavy with honey. We could have done the job in six hours; but we had only a two-frame extractor, and we could not all work to advantage. The uncapping was done with a cold Bingham knife. We would not use a hot knife in our part of Texas.

My experience with the shallow frames convinces me that they are all right for the man who has a good deal of time to fool away, but that they are not suited for the busy man. I could never take care of my 500 colonies, and at the same time operate my farm, cultivating 150 acres of land myself, if I used shallow frames. To bother with a sectional hive when it comes to finding a queen is out of the question altogether

A COUPLE OF AMERICAN BEE-HIVES AFTER THE PATTERN OF THOSE PATENTED AND MANUFACTURED BY H. A. KING ABOUT 45 YEARS AGO.

with me. Then, handling 10,000 shallow frames instead of 5000 deep ones, as in my case, is again not to be thought of. It is true that we have to brush the bees off the full-depth frames; but we get all the bees, and it takes just a little more time for the whole job. We have smoked bees out of shallow supers, as Mr. Scholl describes; but the work is not satisfactory, as there are many bees left in the supers to crawl out in the honey-house and get into every thing. I bought an apiary which contained shallow frames. It is still in my possession, and I intend to make wax of the combs and kindling-wood of the frames this winter.

If one is running for comb honey, and wishes to use only strips of foundation, and no wire, the shallow frames might be all right; but I can not sell comb honey to any appreciable extent; and when I do sell it I produce it over full-depth frames on full sheets of foundation with one and two wires to the frames.

Bartlett, Texas.

THE H. A. KING AMERICAN BEE-HIVE.

BY A. I. ROOT.

When I first became interested in bees and bee culture, nearly 50 years ago, if I remember correctly my first truant swarm was put into a Langstroth hive. Afterward, however, I ran across H. A. King's "Bee-keeper's Text-book." I finally paid a visit to his hive-factory at Nevada, Ohio, which I described briefly on page 705, Nov. 15, last year. After talking with Mr. King, and reading his text-book, I felt so well satisfied at that time that the American hive was something later than the Langstroth, and an improvement on it, that I purchased the right and manufactured forty or fifty hives like those shown in the cut. Now, there are some good things about that old American hive. The frames were at fixed distances when the movable side was put in place and securely buttoned up. Of course, the frames could not be removed without taking out the movable sides The large entrance shown in the cut for use in hot weather, with the entrance-block taken out, was a very good thing; and the auger-holes above for an entrance in winter seemed to be a pretty good thing also. But when I began to write for the old *American Bee Journal*, and became acquainted with its editor, Samuel Wagner, he succeeded in convincing me that the Langstroth hive was not only more largely in use than any other hive, but also that it was more likely the one to be settled down on as the standard in the future. The arguments he presented, besides some from father Langstroth, after I had become acquainted with him, were so convincing that I cut all of my combs out of the American hive and transferred them back again to Langstroth frames.* The years that have passed since that time have demonstrated the soundness of the judgment of both Langstroth and Wagner. Considerable credit is also due to H. A. King for having introduced

*By referring to back volumes of the *American Bee Journal* for 1866 I find I tested both American and Langstroth hives side by side, and the latter gave the most comb honey (in *boxes*) every time.

improved bee culture largely in many places, and also for having conducted for many years a valuable periodical called the *Bee-keepers' Magazine*.

Ernest, in some of his foul-brood-inspection rambles, ran on to the two hives shown in the picture, at the residence of Mr. J. N. Delong, of Homerville, Medina Co., Ohio.

A NEW AUTOMATIC CAN-FILLER.

A Practical Device for Filling Five-gallon Cans Without Shutting off the Stream of Honey,

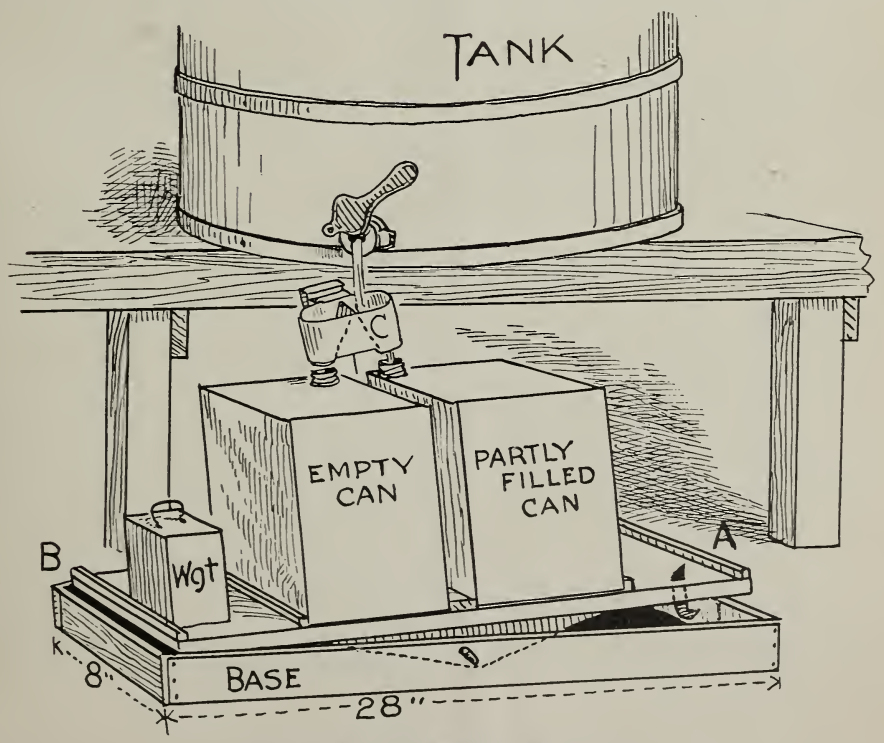
BY W. C. EVANS.

Those who have any amount of honey to run into five-gallon cans will find my automatic device very useful. I have no patent on any part of my outfit, and any one who wishes may make one of them; or, better still, get one made at some factory where the parts can be built more accurately. The capacity of the filler is limited only by the size of the faucet or gate in the honey-tank, as well as by the openings in the cans to be filled. I have canned as much as 800 lbs. per hour without spilling a drop of honey on the floor.

The drawings will make the operation of the device clear. The stream of honey is transferred from one can to another without closing the gate. One can stands on each side of the pivot of a balanced platform. When one can is full it sinks down, thus raising the empty one so that the stream of honey is deflected by means of the double funnel into this empty can. The full can may now be removed, for a steel catch holds this end of the platform down, and an empty one is put in its place. The weight is now transferred to this end of the platform, which weight automatically releases the iron catch at that end, so that, when the can on the other end is full, this first end may rise as before, thus deflecting again the stream of honey. All the attendant has to do is to change the weight from one end of the board to the other and replace the full cans by empty ones.

If necessary an alarm-bell may be easily attached to ring when one can contains the full weight of honey. The bell will continue to ring while the honey is filling the other can, or until the full can is removed, an empty one put in its place, and the weight transferred to the other end of the board. There is no chance for running the honey over, for the attendant may replace the first full can by an empty one any time while the second can is filling.

I use a low wide funnel (not shown) on each can, each funnel being provided with a cone-shaped screen that extends well down into it. The construction of the funnel is such



THE EVANS AUTOMATIC CAN-FILLER.

The stream of honey runs all the time. When one can is full it sinks down, bringing the other half of the double funnel under the gate.

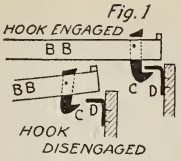
that there is no chance for flies or bees to get into the can underneath the funnel, and the screens prevent them from getting in with the honey. Of course, all honey should be well strained before it reaches these funnels. I use the Alexander strainer, and like it very much.

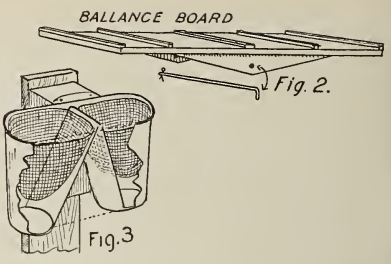
By changing the size of the weight it is possible to weigh and fill any size of cans. A weight of concrete 8×8×6 inches will weigh from 22 to 24 pounds, which is about the right size to use when filling 60-lb. cans. It should be noted that the weight is further out toward the end of the board than the can of honey, and for this reason it is not necessary to use a weight that equals the weight of a can of honey.

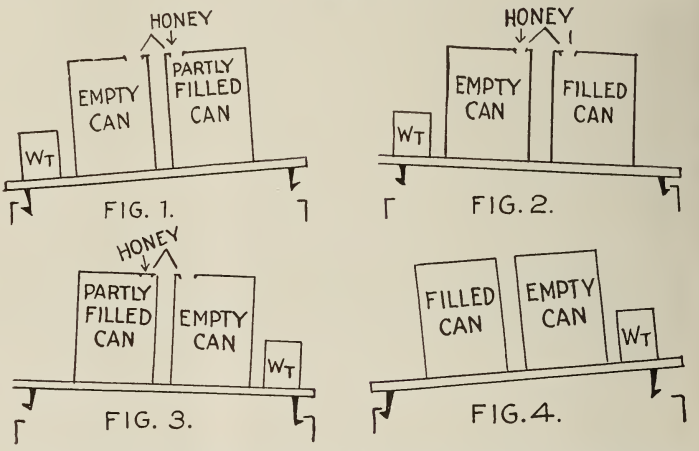
The tilting board, when both cans are removed, should just balance when the base is on a level floor. If one end were higher than the other, the upright piece that supports the double funnel would lean toward the lower end, and therefore cause one can to be a little light while the other one would be correspondingly heavy. I mention this for the reason that one of my friends who was using a filler that I made for him had trouble because the floor was not level. An average floor is all right.

Fort Collins, Colo.

[If one has need of an automatic filler, it seems to us that this one fills the bill exactly. It is surprisingly simple, and the few parts would not easily get out of order. We are frank to admit that it is the most satisfactory outfit of its kind that we have seen. —Ed.]







In Fig. 1 the weight holds the hook away from the catch so that, when the can at the right is full and the weight is overbalanced, the left can will rise and the right hook will engage the catch. The honey now runs into the left can, Fig. 2. The full can on the right may now be removed, for the right catch holds that end of the platform down, and an empty can put in its place. The weight is next transferred to the right end, releasing the catch at the right, Fig. 3. As the can on the left becomes full it sinks down so that the honey again runs into the empty can on the right. Meanwhile the hook on the left has engaged the catch, Fig. 4. The replacing of the full can on the left with an empty one, and the transferring of the weight to the left brings the apparatus back to the position shown in Fig. 1.

THE ALEXANDER PLAN FOR CURING EUROPEAN FOUL BROOD.

BY ALFRED L. HARTL.

I have been reading those articles on the Alexander plan for curing European foul brood; but as this disease is such a very serious one I can hardly believe that a badly infected colony can be successfully cured by a period of queenlessness. Some writers are positive that it effects a cure, but there are many things in the treatment that do not look reasonable.

I have had no experience with European foul brood; but it seems to me that, if the Alexander treatment is a success, the disease would never have existed, for the bees would naturally cure themselves every year. All these writers agree that, in the period of queenlessness, since no eggs are laid, and there are no larvæ to feed, the bees have time to clean every cell in the brood area, since in the 27 days all healthy brood emerges. Now, does not this same thing happen every spring? The bees stop brood-rearing every fall, and begin again in the spring; and the colonies are not only broodless 27 days, but often for two months, even here in the South. The queen is present, but she lays no eggs. When spring comes, the bees set to work cleaning the cells, and they not only clean them half way, but they polish them besides. A few days later the queen starts to lay in these polished cells, and she will not deposit one egg in a cell that is not perfectly clean. Now, does not this fulfill every requirement? Yet the disease is spreading over all the States.

There is another point in this treatment that does not look reasonable in this plan for curing disease. Every one who has had

The A. I. Root Company's Fire-proof Warehouse, 148x48, three stories, with loading platform and steel bridge connecting old Warehouse on the south.
See Special Notices.

The East and West Railroad Connections and the Warehouse Facilities of The A. I. Root Company. See Special Notices.

Two of The A. I. Root Company's Warehouses with a floor space of 7000 square feet. See Special Notices.

any experience with American or European foul brood agrees that the disease is distributed by germs in the honey or by the combs. Many bee-keepers have reported buying honey on the open market and infecting every colony in the yard. This is certainly proof enough to show that danger lurks in the honey. With the queenless plan for treating this disease, is it possible to expect a cure if there are ten or fifteen pounds of infected honey in the hive?

If a colony is dequeened during the honey-flow, as soon as the young bees emerge from the cells such cells will be at once filled with honey, and also those from which the dead larvæ were removed. This certainly means that the honey will contain the germs of the disease.

Elmendorf, Texas.

MATING QUEENS FROM UPPER STORIES.

BY C. S. HARRIS.

In the June 15th issue, page 391, I note a question from Arthur M. Wheeler, Jr., in regard to replacing an old queen with a young one mated from an upper story. Dr. Miller replies, but is not sure of the result. I can say that, unless it is a case where locality cuts a figure, it will work all right. For twelve or fifteen years I have been rearing queens in upper stories, in some degree, although not particularly for the purpose desired by Mr. Wheeler. I have always found these queens accepted in any part of the hive just as readily as the old queen; and, still further, I find it is not even necessary that they be reared in the upper story of the hive, for I can take a queen from elsewhere, introduce her in an upper story over a single thickness of wire netting, within a few days remove the netting, and as soon as the bees from below have freely intermingled with those above the queen, if transferred upon a frame of brood they can be safely placed below if the old queen is at the same time removed. I have never tried running the two queens together, being satisfied that, in such a case, one or both would be killed in the fight which would be sure to ensue.

I give the colony queen the range of two ten-frame bodies, and over these I place another full body with a queen-excluder both above and below it, the young queen being reared in still another full body on top of this. The flight-hole may be either at the side or rear.

Except when a queen is to be mated, I raise this top super, or body, a bee-space at the rear to allow air and flight; but as my supers used for this purpose have an excluder attached to the bottom I find it necessary to close this opening when a virgin is ready to make her flight. With a loose excluder the super might be raised a bee-space above it, and no other entrance would be necessary.

Under favorable conditions a queen can be reared and mated from this upper story without the use of any thing but the queen-excluding metal between it and the lower story; but I find one thickness of wire netting in addition to the excluder is necessary much of the time when a queen is to be mated. As soon as she is laying, this wire netting may be removed.

I have been rearing queens for a number of years, and my cells are accepted and built out in the top story of a hive having two queens, one in the lower and one in the topmost. In this way I secure extra strong colonies, and always have brood when and where I want it. This plan as I use it gives me fine cells with less work than any method I have ever tried or seen used by others.

Holly Hill, Fla.

THE EIGHT VS. TEN-FRAME HIVES.

Sectional Brood-chambers.

BY J. J. WILDER.

Differences of opinion arise too often among our apicultural authorities for the greatest good to our industry. Especially is this true on the question of the size of brood-chambers and supers. It now seems that some particular hive or super will win out against all others; and as a bee-keeper, and supply-dealer as well, I long to see the time when this will take place. The sentiment seems to favor the ten-frame hive, because it is larger. This is one point in its favor, but it is not large enough to furnish sufficient room for the average queens in our apiaries. Then, too, the ten-frame does not admit of as rapid handling of frames as does the eight-frame hive, because it is not large enough to hold ten frames properly, especially after the usual coat of propolis is deposited on the inside fixtures. Moreover, the outside frames are too close to the sides of the hive, and the bees often neglect this outside comb surface or extend brace-combs from them to the hive-sides, resulting in mutilated combs. If the center-combs are removed for an examination of the condition of the brood-nest, many bees are crushed on account of lack of room between end-bars. Take it all in all, the ten-frame hives are too large for nine frames in the brood-chamber, and too small for ten frames for rapid manipulation on the part of the bee-keeper who produces honey in a wholesale way and must, therefore, inspect the brood-chamber many times during the season.

The eight-frame hives provide just the proper amount of room for the eight frames when the follower is removed. Any frame can be quickly removed without killing the bees, and the outside combs are well occupied, and free from brace-combs.

This leads me to mention what I regard as the best brood-nest for the production of comb, extracted, or bulk comb honey, either on a wholesale plan or otherwise—for the South or any other locality. I know that differences of opinion will exist; but I am sure that, when my arrangement is put to actual test for successive years, more bee-keepers will agree that an eight-frame full-depth hive-body and a shallow extracting-super on top, each containing the proper size and number of frames, is the most ideal arrangement. It is more natural for bees to work up than sidewise; and it is just as natural for the queen to follow with her work. There is not much doing in the production of bees until the queen moves up out of her lower quarters, and the shallow frames above give just about the right amount of additional egg-laying room.

In most localities here in the South we have several months of swarming to contend with. If the shallow brood-chamber above is not allowed to be filled with honey (and it rarely does get filled, with a queen of average prolificness), there is no danger of swarming until this upper brood-chamber is too full of brood. Then, since all signs of swarming will first appear in the upper combs, which can quickly be detected by tipping up the shallow body (many times there will be no sign of swarming any other place in the hive), this arrangement, therefore, brings us as near to a non-swarming hive as economy or labor will allow.

Sectional brood-chambers are strongly advocated by some of our leading bee-keepers, and they have some advantages over single brood-chambers; but the arrangement that I have mentioned combines the good qualities of both, and overcomes some of the following difficulties as well. The shallow frames used under sectional brood-chambers are too shallow to allow both brood and honey, and consequently there is no rim of honey around the brood as in deeper combs, and the queens are constantly going above, seeking more commodious quarters, thus deserting the lower combs that contain no honey, and which have to be constantly removed and placed on top or the use of them will be lost. Then, too, there being no honey around the brood, excessive robbing may be the result, so that the bee-keeper will have to feed or allow the bees to starve. Very often it is necessary to cut up the brood-nest by adding a super; but this is almost sure to excite swarming and make too many brace-combs that have to be cleaned up. Lastly, with the sectional hive the queens have to crawl over too many sticks, and search in too many out-of-the-way corners for cells for the very best results.

Cordele, Ga.

THE BEE'S SENSE OF SMELL.

Is it Not this Sense Alone that Guides the Bee to the Source of Nectar?

BY WM. M. WHITNEY.

Mr. Raleigh Thompson's article on p. 124, Feb. 15, is interesting, as it indicates the acuteness of the sense of smell of the honey-bee. It never has been my belief that bees sought their field of labor by the sense of sight in the first instance. Like all other winged insects that I know any thing about, except, possibly, the locust family, they seek their food through the sense of smell by flying against the wind. I believe the composite eye is chiefly valuable in the field to guide them in their labors among the flowers near by, as otherwise they would miss many blossoms, the scent being wafted away by the wind, and to mark their location by the observance of nearby objects; and that, the eyes being set in a triangular form in the forehead, they form the head-light, so to speak, to blaze the way; and the sidelights, with their thousands of facets, take cognizance of surrounding objects on

their way to and from localities, enabling them by the aid of memory to make a bee-line as we call it.

Old bee-hunters recognize this faculty in the bees when they burn a bit of comb to attract them to the honey-box. I never heard of a bouquet of flowers being used appealing to the sight of the bee for that purpose. Yes, I believe it is the sense of smell that enables them to seek their food, as it is of other winged insects; and it is the composite eye that guides them to flowers near by, which otherwise might be missed, just as it is the composite eye of the common house-fly that enables it to see nearby objects. The fly has no use for long-distance sight.

In testing the keenness of the sense of smell in the honey-bee a number of years ago I had the following experience: One day after extracting I took a comb several rods from the yard in the direction the wind was gently moving, away from the yard, you will observe, and set it on the ground against a post and awaited results. The bees were flying in this direction to a large patch of sweet clover about a mile away. In less than five minutes my curiosity was rewarded by seeing a bee about a rod away, and about half a foot above the lawn, coming slowly against the wind in a zigzag course, as though hunting for something it had scented, till it found the comb. I walked still further away and saw others coming—not from the yard, but toward it, and several rods away, hunting in the same manner as the first, till they found the comb. Soon a line was established between the comb and yard, when they came and went on what we call a bee-line.

Now, I think these bees were on their way to the clover-field, but, scenting the comb somewhere on the way, they turned back to find the source.

It has been a very common thing with me to observe bees flying along in a zigzag course just above the lawn, hunting for drops of honey that had dripped from the burr-comb of a super which had been carried to the honey-house several rods away; and the manner of search was very much the same as that of a hunting dog in search of the track of its prey. I really think that there is no animal with keener sense of smell than the honey-bee.

I have sometimes almost felt like reproaching myself for cruelty in experiments to test the accuracy of the theory that the antennæ are the organs of the sense of smell, to say nothing of hearing and feeling.

Just in proportion to the clipping of the antennæ, the workers lost all desire, apparently, to perform any of the functions of their species, even to feeding themselves, though honey was within easy reach. Some may say that such an experiment furnishes no evidence that this is the organ of smell. At any rate, it satisfied me that, apparently, every sense but seeing had been destroyed.

If the sense of smell is the chief means employed in finding nectar, as I believe it is, how important, then, that it be extremely acute! Donning the old bee-yard suit that has been hanging up for six months will call them to me on any warm day in early spring, not because they remember the old clothes, but it's the lingering scent of honey, just as it is the wax and honey smell on the old bottom-board, or on the window-sill which we sometimes read about, that attracts them. Were every bee in the hive that stood on the old stand in the fall killed, plenty of bees could still be seen flying about the old stand in early spring.

Bees' memory is about three days long. On a division being made, the new colony may be opened anywhere in the yard at the end of that time without the fear of their returning to the old stand. An experiment along this line of testing the memory of bees was made a few years ago with one of your ten-frame observation hives which I have had in my room, as follows: A wire-screen cover was put over the frames, leaving a space of 1½ inches above the top-bars. The bees were fed regularly for several days by trailing over the screen very thick honey. After a few times feeding, they would gather on the under side of the screen as soon as I approached the hive, expecting to be fed, just as pigs or chickens will congregate at their accustomed place to be fed. But on failing to feed them for three days they did not make their appearance on my approach to the hive as before. On resuming the feeding, the same experience was repeated; hence I conclude that their memory is short. Also, from careful observations, I conclude that their sight is not telescopic. If this view is not correct, bees might be expected to return to the old stand, though removed five miles away.

Batavia, Illinois.

A Lucrative Lay.

BY THOMAS H. ROGERS.

A hen will lay one egg a day—
  One day in every three;
Ten dozen eggs a year, we'll say,
  Each hen shells out for me.

But she's not in't for laying eggs
  Compared with buzzy bee
That lays a thousand eggs a day—
  Two thousand—sometimes three.

For size I'll take my old hen's eggs;
  For numbers, those of bee;
And thus I'll pile my wealth so fast
  That cost won't worry me.

I'll do this stunt—combine the size
  And numbers—don't you see?
I'll have just one good egg-machine—
  A cross 'twixt hen and bee.

Cambridge, Mass.

Heads of Grain

from Different Fields

Does More than One Virgin Ever Leave the Hive at One Time for a Wedding-flight?

On April 17 I unpacked my colonies and clipped their queens. I had them packed on the Orton plan, as illustrated in the A B C book, and on that date they had from six to nine frames of brood, and the hives were literally full of bees.

On May 7 I found a good-sized swarm near my yard; and as I had clipped all my queens I congratulated myself that bees from somewhere else had swarmed, for I was sure mine could not. While hiving them I saw the queen and clipped her. Going to the hive two hours later I found the bees balling on the alighting-board. She was dead, and I was about to shake the swarm in front of some of the hives when I noticed another queen. I did not shake the bees there, but gave them a stand in the yard. I afterward noticed three dead queens in front of one of my hives. I opened this hive and found a fine bright queen there, and her wings were whole. There were empty and vacated queen-cells all through the hives.

Now, were these queens all virgins? I found only sealed brood. I think the old mother was lost when I clipped her wings two weeks before; but why did not the first queen hatched destroy the rest? Why did the swarm ball one and not the other when both came from the same hive?

Niagara Falls, N. Y., May 9. J. Roy Lincoln.

[With nearly every after-swarm, and sometimes with first swarms, there will be one or more virgin queens. There may be a dozen or even two dozen —depending on circumstances. One of our correspondents once said that, in the case of an after-swarm, it seemed to be *all* queens.

After the swarm is hived it is then a question of the survival of the fittest. The strongest of the virgins, or it may be the one that gets the best death-grip, will kill off the others; the experience, therefore, that you relate is nothing unusual. Sometimes the bees take a hand by balling one or more of the surplus queens. They are much more inclined to do so immediately after she has been clipped, especially if they have other queens in a hive that has not been tainted by human fingers.

It is possibly true that, when you touched the old queen in the act of clipping of the colony that had the virgins, the odor of the queen had been changed so that they balled and killed her. They then raised a number of cells, and when one or more of the queens went out for a flight the bees followed them. This very often happens. In answer to your question, we may say that one or more queens may leave a hive and be mated at approximately the same time. Moreover, a single virgin may take several wedding-flights and possibly meet a drone more than once. On this last point we have well-authenticated cases on record.—Ed.]

A Bee-keeper who Found Solid Tires Not Satisfactory.

I note on page 189, March 15, that H. G. Quirin has an idea that a solid-tire automobile would be ideal for a bee-keeper. To any one who contemplates buying a solid-tire auto, especially a bee-keeper, I would say, *don't*. I bought an auto four seasons ago fitted with solid tires, and have known intimately several who have had them, and we discussed our troubles together. After the first season we changed to pneumatic tires. Solid tires are noisy, hard to ride on, hard on the machine, and cost more in the end, than pneumatic tires, through trouble and breakage.

The constant jar caused by solid tires causes crystallization of the steel in various important parts of the car where the most strain occurs, and sooner or later they will break, with the liability of causing serious accident, should one happen to be going at high speed at the time. Our particular trouble was breaking of the steering knuckles, which was really dangerous. There was always something getting loose.

A car fitted with good pneumatic tires, of dimensions to correspond with the weight of the car, will give the best service in the long run, for less money, and for a bee-keeper will carry his bees and honey with greater safety than solid tires can ever be made to do it.

As to the high-wheeled buggy, they are no better. There were four buggy autos sold in this vicinity last season, and every one of them had broken axles in from six weeks to three months. The higher the wheel the greater the strain at the shoulder in the axle.

Belgrade, Montana. C. A. Kinsey.

[It is not quite clear to us whether you refer to solid tires on low wheels or on high buggy-type wheels. Solid tires on the former are not a success; but we have been led to believe that solid tires on high buggy-wheels, large enough in diameter to roll quietly over obstructions, and not bump squarely against them, give good results. We quite agree with you that pneumatic tires on ordinary roads are far superior; but they are the meanest thing that was ever invented in slippery or in deep mud. Pneumatic tires never ought to be used on any thing except paved streets or on good roads. Where ruts are deep, roads rough, we would advise the high buggy-type wheels, solid tires. If this advice is not correct we shall be pleased to hear from those who have had a contrary experience.—Ed.]

Robbing Induced by Giving Chunk Honey to a Weak Colony.

I have just had an interesting but annoying experience with robbing. The day was cool and wet, and the bees were within doors, so I thought it would be safe to put a few bits of broken comb and a little waste honey from the dining-table into the upper apartment of an old-fashioned box hive where the colony needed a little aid. Passing the hive an hour or so later I saw that robbers had scented the honey already, and were attacking the colony. There was nothing to do but to shut the entrance tightly, which I did at once.

About 5:30 P.M. I saw that the grass and weeds around the front of the hive were sprinkled with bees. They appeared to be young bees, as they were small and inactive, but they clung very tightly to the points of the goldenrod leaves. I broke off the leaves, the bees clinging fast, and laid bees and all on the entrance-board, when the bees left the weeds and crawled inside. I searched for half an hour, or perhaps an hour, before I got them all gathered up and laid at their entrance. At this time the robbers had become discouraged in their effort to find the entrance, and the way was clear for these enfeebled bees to enter.

It would seem, from all the circumstances, that the young bees had left the hive for a trial flight, before the robbing began; then about the time I shut the entrance they had become chilled and were returning; but finding the entrance shut, and a horde of robbers buzzing around their home, they had settled down on the weeds instead of alighting on their entrance-board. Am I right in this explanation?

I have learned a lesson in bee-feeding, and it is this: If I have comb honey to feed to a weak hive, give it to them after dark, when it is impossible for robbing to take place. Possibly a very rainy day would do. Be that as it may, the loss of time and the young bees that were destroyed were worth much more than the waste honey which I saved from the pigs and fed to the bees only to make so much mischief.

How are empty combs to be fastened into sections for placing in supers? I am holding them for an instant on a hot stove, then sticking them fast to the section. Is there a better way?

I have three old colonies, one in a box hive, one in a store-box, one in an ancient form of movable-comb hive. Could these be divided and transferred into six modern movable-comb hives? Would it be safe for me, with neither experience nor apparatus, to undertake the job? If it seems possible to multiply the three hives to six, is it necessary for me to buy three queens? J. C. M. Johnston.

New Wilmington, Pa., July 1.

[It is a little risky to give chunk or broken honey to a weak colony at any time. While the atmosphere might have been a little chilly, yet the smell of broken honey is likely to attract robbers. As you say, it is a good deal better to feed a weak colony at night, although it can be done in the daytime if the entrance is sufficiently contracted.

Empty combs can be fastened in sections by applying them momentarily to the top of the stove. It would be much cleaner and handier to use a hot plate over a little lamp stove. As a general thing it is not advisable to put full-drawn combs into sections from the previous season. They merely serve as good baits to induce the bees to go above.

It would be perfectly feasible for you to transfer the colonies referred to into modern frame hives. We would advise you to follow the directions in any of our standard text-books, especially the A B C and X Y Z of Bee Culture. See "Transferring."

In making increase you can buy queens, for in so doing you get stronger colonies for winter. If the increase is made early in the summer you can rear your own queens, but in the meantime you will lose valuable time.—ED.]

More about Sweet Clover, etc.

I note there is considerable said in GLEANINGS about sweet clover—a pest as I have always considered it (if it is the same), of which there is a great abundance here. It is thick along the side of every road around my place; and, considering it a pest, I have tried to keep pulled up every plant found inside the fence—not that I knew any thing worse about it than that all our farmers pronounced it a pest, and were trying to eradicate it, and that I never saw an animal of any kind that would eat a spear of it at any season, no matter how hungry, though it is the first thing but buckeye that is big and green enough to furnish a bite in the spring.

I note you say, "If your crop won't eat it, let me know." This country is completely overrun with it—acres and acres of it going to waste; but it is surely good bee pasture.

The story goes in these parts that some 40 years ago there was an aged Methodist preacher by the name of Salisbury who came from England, and he was a bee-keeper as well. He settled at Comargo, Coles Co., Ill., a station some 40 miles west of here on the Springfield branch of the C., H. & D. R. R. He had a small quantity of seed sent him from old England that he scattered along the highways to furnish pasture for his bees.

I keep some 20 stands of bees, and have about an acre of fine thrifty alfalfa just across the fence from them, and have so had it for three years. It is in full bloom, three times last season, but I have never seen a bee on a blossom. Can you tell me why this is?

Hillsdale, Ind., July 5. ED VAN SICKLE.

[I congratulate you, friend V., on having so good a thing as sweet clover all about you, and yet you did not know it. The sample you inclose is veritable sweet clover, and I am sure that your stock will eat it when they have once been taught what it is. Some time when your horse is hungry, and is grabbing for all sorts of vegetation, let him get hold of some of this sweet clover. After he has learned the trick I feel sure he will prefer it to every thing else, and so will all other kinds of stock. And another thing, just tell your farming friends that this same sweet clover is worth more than red clover or any thing else to plow under. If you want to get the very best results with alfalfa, get sweet clover in the ground first, and then plow it under and sow your alfalfa; or, if you choose, put on any other where the rank growth of sweet clover has been plowed under, and see what the results will be. If it is true that a Methodist preacher did start sweet clover in your region, he certainly did "missionary work" for the coming generation of farmers.

In regard to the bees not getting honey from your alfalfa-field, it has been said that alfalfa does not often yield nectar in the unirrigated portions of the country. Can our friends where alfalfa honey is a tolerably sure crop tell us more about this? —A. I. R.]

Extracting Honey Without an Extractor.

Can you tell me how to separate the honey from the wax in brood-frames that are not of good shape without an extractor? I do not care to save the comb except for wax.

Madison, O., March 3. J. H. WOOD.

[If the combs are full of old cocoons you should squeeze them in a press and thus separate the honey from the wax; but if they are not very old we think it would be much better if you placed all of the combs, or as many of them as possible, in a large can or pail, and then set this vessel in a larger can containing hot water. By surrounding the can containing the comb with the hot water you can melt the wax, and the wax will then separate and rise to the top, floating on the honey underneath. When all is melted you can allow it to cool and then lift up the cake of wax off the top, when you will have your honey in good shape, with the exception that it will need to be strained to get rid of the propolis, pollen, and other refuse. Be careful not to boil the water, since there would be some danger of injuring the flavor of the honey.

The plan given above would be similar to the principle used in the capping-melter, although in the latter device the honey and wax as soon as melted run out of the bottom directly into another receptacle so that the process can be continued, and the honey is not heated longer than necessary.—ED.]

Do Center Baits Mean Drone Brood in the Sections?

Doolittle tells us to put the bait sections in the center of the super; but I should think he would have baits full of drone brood if no excluder is used. I put all baits in the corners and ends of the supers, and I get the exact results that Dr. Miller does by putting a completed super from some hive on top of the super that has the baits. The bees seem to take to running up into this fresh full super, and soon fill the space between it and the hive full of bees. I believe it to be a good plan. It has proven a success with me in hot weather, but the opposite in the fall.

Bradshaw, Neb. C. B. PALMER.

[Following is Mr. Doolittle's reply:]

Undoubtedly you would be right about this drone-brood matter if the baits were of drone size of cells; but as nearly every bee-keeper now fills his sections full of very thin worker foundation these baits are of worker comb, so that drone brood in sections "cuts no figure" during the twentieth century.

Baits in the corners of the supers are all right with a hive *full* of bees; but as baits are mainly used to entice the bees into the sections *early* in the season, before the colonies get strong enough to contract the swarming fever, they do this enticing much the best in the center, thus starting the bees above long before they would with these not over-populous colonies if placed at the corners.

You admit the correctness of my position when you say your plan works well in *hot* weather with a hive full of bees, but the opposite in the fall.

Borodino, N. Y. G. M. DOOLITTLE.

A Reply to Dr. Miller on the Question of Cells Hatching in Nuclei or in Nursery Cages in a Strong Colony.

Dr. C. C. Miller:—We find proof every day, in our queen-rearing work, that cells do not hatch as well in cages as when in direct contact with the bees. We hatch a lot of virgins in nursery cages because we have orders for virgin queens. At the close of our grafting last year we made a large graft from which we got 140 cells. This was on Aug. 28. On September 7 we found that we had only about half enough queenless nuclei for our ripe cells, so that over 60 had to be caged. These were hung in the upper section of strong two-story colonies. Four days later we found that, while nearly every cell in the nuclei had hatched, only 12 hatched in the nursery cages.

Our nuclei were somewhat depleted, as they always are near the close of the season, and the nights were cool; yet under these unfavorable conditions the odds were five to one in favor of hatching the cells in the nuclei. More than that, we have found from repeated experiments that queens hatched in the nuclei will commence laying two days sooner "on an average" than queens hatched from cells of the same date in cages and introduced to the nuclei.

Medina, O., July 9. M. T. PRITCHARD.

[It will be remembered that Mr. Pritchard is the apiarist in charge of our north yard.—ED.]

Continuous After-swarming with Virgin Queens.

In July I had a colony swarm and return to the same hive. These bees came out (just a few at first) and circled around; then one morning I heard a roaring sound; and when I looked out the air was thick with flying bees. I watched, and noticed a few seemed to be alighting in front of the hive from which they just came out. I went to see what they

were going to do, and just then the queen alighted and ran into the hive, the bees following till they all went in.

On the third day afterward this performance was repeated, the queen going in as before. On the fifth day the bees came out again, this time clustering about 30 ft. away. The next day there was another swarm from that hive; then I examined the combs, and found a nice-looking queen, another queen just about out of the cell, another queen about half grown, and three other cells. I should be very glad to know the cause of the swarming.

Heaton, N. Dak. MRS. D. B. SCHWAB.

[This seems to be a case of continuous after-swarming. Usually, with a first swarm, the old queen and the swarm leave just before or just about the time that the virgins from the cells begin to hatch. If there is nothing done with the parent colony these virgins will be quite apt to take out after-swarms when they take their flight. The usual rule is to cut out all the cells but one after the first swarming, and even then it may require additional treatment to prevent the bees swarming out.—ED.]

Are Foul-brood Scales and Honey Often Found in the Same Cell?

A. H. Gilstrap, p. 412, appears to have found that which I have long been looking for—namely, the decayed larvæ of foul brood and honey occupying the same cell. While I have, time and again, diligently sought for this combination, I have as yet been unable to find it. Occasionally isolated cells of live brood can be found in capped honey; and so also can capped-over foul-broody cells be found under the same conditions; but to find honey stored in any cell showing any trace of foul brood I have as yet been unable to do.

I should not wish to be quoted as authority that this combination does not frequently occur, as my observations have been confined quite largely to cleaned-up combs; but I am very sure that it is a far more rare occurrence than is generally supposed. By the way, this is one of the strongest proofs supporting the clean-up theory. If the dried-down scales of American foul brood, as we are taught, can not be removed by the bees, what becomes of the evidence of them when those same cells are filled with honey?

A CORRECTION.

On page 416, July 1, I was made to say, "When I returned I expected to render those foul-broody combs of this one colony at once; but to my surprise the brood was perfectly healthy." What I really meant was that the brood was *apparently* healthy.

Prophetstown, Ill. HENRY STEWART.

Another Way of Filling Empty Combs with Syrup for Feeding.

On page 341, June 1, Mr. Doolittle tells us how to fill empty combs for feeders. I have a trough large enough to dip a Langstroth frame down the full depth. I put the syrup in the trough and dip the cut combs down into it clear up to the top-bar. I place the combs into the syrup very slowly so that the air in the cells can have a chance to get out. As the syrup runs into the lower part of the cell, the air is forced out of the upper part. Then I take the comb out and place it in a hive-body, near by, over the uncapping-table, the drip from the combs passing directly down into the capping-can, as when I am extracting.

I fill the combs about noon, so that the drip will have disappeared by the time the evening feeding commences. By this plan of feeding one can select the combs that he wants for brood-combs, fill them, and put them in the hives right where they are the most needed. Of course, combs containing good sealed stores are all right. I agree with Doolittle on this point.

Soldiers Grove, Wis. C. S. GALD.

Good Results when Hive is Shaded.

On page 360, June 1, reports are called for in regard to the efficiency of colonies in shaded hives. I agree with Mr. Barbisch, for I have had a hive standing between two buildings for four years. The sun shines on it for about 2½ hours toward evening in the summer time. In the winter, for about three months the sun does not reach the hive at all. Last year was a little below the average; but I secured from this colony $6.73 worth of extracted honey, and my next best colony, in a hive where the sun could reach it, gave me $5.35 worth, the others that were not shaded extending all the way down to $2.15. This colony standing between the two buildings has not swarmed for the last four years. CHAS. W. HOPSECGET.

Clear Lake, Wash.

Willows for Bee-forage in New Zealand.

Mr. Doolittle has mentioned willows as being good bee-forage in spring. I can fully indorse what he said, as here in Kaiapoi we have miles of willows along the Waimakariri River—both weeping and straight—which yield an abundance of nectar, lasting with both kinds from two to three weeks. On a bright day the trees fairly hum with the bees working so that they can be heard for some distance. When one looks into the catkins the nectar can be seen quite easily with the naked eye. The trees grow to a considerable size here, it being no uncommon sight to see willows with trunks two to three feet in diameter, and of a good height. The weeping willow is only six weeks without leaves for the whole year.

Kaiapoi, N. Z., May 6. S. RINALDI.

The Proper Plan to Get Foundation Drawn Out.

I am short of extracting-combs, and wish to have them built from foundation this season. I desire no increase, and like to leave the bees in the fall on new combs. The reasons are to have fewer drone combs; second, to have a stronger comb to extract from. The question is now, which is the better: when bees need room to put the second story with foundation on top, giving the queen both stories, and then when filled with honey and brood reverse them, putting the upper story on the bottom and then keep the queen below with an excluder, or to put a hive with foundation on the bottom-board instead of reversing later, and then when filled with honey and brood to keep the queen below with an excluder?

Falmouth, Michigan. ALBERT TIEN.

[We would recommend the first plan, of putting foundation in the upper story, rather than in the second.—ED.]

Bees that Lived all Winter and then Stored.

Concerning the life of a bee, page 280, May 1, I will say that I introduced an Italian queen to a colony of Banats the latter part of last August. She did not lay at all last fall, but is doing finely this spring, and her bees were very evenly marked. Now, the entrance of this hive faces east, and all of my others south or north, and at least 12 ft. away. What I want to say is that there are quite a few Banats left in that hive now, and they have been working quite steadily since March 20. I killed the old Banat queen because her bees were so cross.

Oneco, Ct., May 12. T. B. MOWRY.

Swarms from Swarms.

I had a good deal of trouble with my first natural swarms. Just about the beginning of the buckwheat flow, which is always a large crop here, these first swarms will start to swarming again. This makes it bad, as it is very important that the bees all be at work. I had plenty of supers on, and the bees were not crowded for room. I had eight or nine that bothered me more or less in this way.

Cranesville, N. Y., Jan. 11. F. W. RANKIE.

An Apiary Lost on Account of a Flood.

On July 30, last year, I met with a severe loss on account of high water. About 70 hives washed away, about 45 of which contained bees and honey. I thought they were above the high-water mark. On Feb. 4 back water caused me to move some of the hives and place them on trestles. This time the water came from the creek. I had kept bees on this ground for 25 years, and had no thought of danger from the water.

A lot of the hives were caught by my neighbors, and in all I have recovered about 40 empty hives and one which still had the bees in it after floating down the river for six miles. I estimate my loss at about $500.

Cornishville, Ky. GEO. W. MORRIS.

Full-sized Frames Preferred for Queen-rearing Nuclei.

On p. 389, June 15, is an article from Mr. Pritchard headed "Twin Nuclei v. Single Nuclei." Now, I am not going to dispute a word of his, for I have found that he is correct on all points; but I wish to say that, after trying both twin and single nuclei, I have about discarded both, and have for several years used the large triplet, which is made by using two tight division-boards in the eight and ten frame hives. The entrances are in each end and one side, and each nucleus in the eight-frame size has two Langstroth frames, while the center nucleus in the ten-frame size has five frames, and is used to draw brood from to restock weak nuclei or start more. These large nuclei are self-supporting, and here in the South they winter as well as the full colonies. I have been surprised to see what good swarms will sometimes issue from them. They are just the thing to build up an apiary, as these swarms will soon make fine colonies. Then when the rush of the queen season is over I can put on an excluder and use a super on top of the triplets and secure some honey, and have all three queens doing duty below. As each queen uses all the combs she can for brood, most of the honey will go into the supers, the bees from all three nuclei mixing in the supers. When the flow is over the supers must come off.

That one nucleus has a queen, and the others now have nothing to do with the bees provided there is no crack or hole in the division-boards through which they might crawl.

In introducing virgins I find many of them missing, some with frazzled wings, some minus a leg, and useless. Those hatched in the nuclei are all right unless naturally deformed, which is seldom the case. Cells, however, should be handled as little as possible, and not taken out of the hive until nearly ready to hatch, which time can be determined by holding the cells up toward the sun.

Sabinal, Texas, July 1. GRANT ANDERSON.

Storing Honey in Galvanized Pails.

Will extracted honey keep if put in galvanized pails?

Holt, Minn., June 25. CHAS. DOHRMAN.

[For a reasonable length of time we do not think that it would injure the honey in the least to be stored in galvanized-iron pails; but for keeping it indefinitely we do not believe you had better use the galvanized metal, as there is likely to be some little action on the metal, due to the slight trace of acid in the honey. Occasionally if a small amount of honey is left in a galvanized-iron can it will be tainted a little, and this shows that there might be some action on the metal if a larger quantity of the honey were left on the metal a very long time in a galvanized receptacle.—ED.]

Why was the Queen in the Grass?

For a period of eight or nine years I have clipped all of my queens. On one occasion when I was busy in my yard I was called in for dinner; and while walking up the apiary I noticed the bees of one hive flying out as though they were swarming, but the colony was in no condition to swarm. I saw the queen in the grass, with a bunch of bees around her, and on opening the hive I found the combs in fair condition. The brood was capped, and there were lots of eggs in the cells. There was no sign of a queen-cell, and, in fact, this colony was not more than a good strong nucleus. I put the queen back in the hive, and did not investigate for several days on account of bad weather. When I looked again I found the clipped queen on the combs all right, and she is there yet, and no swarm has issued so far this season.

I have been wondering whether this queen could have been trying to leave for a second mating-trip. I believe the swarming theory is out of the question.

Hyndsville, N. Y. J. G. WEIDMAN.

[We can not escape the conclusion that, for some reason, the nucleus had attempted to swarm out, and the queen tried to follow; but because she was clipped she could go no more than a foot or two from the entrance. When you arrived, of course you would find a lot of bees around her, Had you not put her in the hive she would probably have gone back of her own accord.

The fact that the time referred to was not the swarming season does not prove that this could not have been a swarm or an attempt at swarming. If the colony was short of stores, or if some condition was not satisfactory, it might swarm out, swarming season or not. Snakes, mice, ants, and other disturbing conditions will sometimes force a swarm out, even when all the conditions for natural swarming are entirely absent.

It is hardly probable that the queen could have been trying to leave for a second mating-trip. No substantial proof has ever yet been furnished to the effect that, *after* a queen has once been successfully fertilized, or rather, perhaps we should say, after she once begins to lay, she will ever leave again on a mating-trip. Virgins sometimes make two or three flights —several of them—coming in with evidences of fertilization before they actually begin to lay. Any amount of proof has been furnished on this point. But these second or third mating-trips must not be confused with the supposed mating of a queen *after* she once begins to lay. If any of our correspondents, old or new, can refer to a single authentic case of second mating, after laying has begun, we should be glad to have them furnish the proof.—ED.]

Why were the Drones Killed?

What is the reason that bees carry out so many drones at this time of the year—May 25? They first brought out the mature drones and now they are bringing out the white larvæ.

THE SOLAR HONEY-LIQUEFIER.

J. E. Crane wants to know more about that fireless honey-heater described on p. 771, Dec. 1. I put some honey through it, and it has not granulated yet. I put it in as soon as it was extracted. If possible it should be left in a full day, and it shouldn't be allowed to reach a temperature of over 160°. I regard this as a very good way for heating up honey in glass packages, for neither the color nor the flavor is injured, provided the temperature does not get higher than it should.

Wildwood, Mich. C. W. REBER.

[Your drones were being killed off simply because the honey-flow had stopped. While drones are not usually destroyed during the fore part of the season, yet if you had been having a flow of honey from fruit-bloom prior to May 25, and that flow was suddenly stopped, you would probably find your drones being killed off as you describe. We usually figure that when drones are being killed off, the drone larvæ destroyed, that the honey-flow is either tapering off or has stopped entirely. In fact, this is one of the very best evidences that nectar secretion has stopped.—ED]

Two Swarms that Hived Themselves.

This morning two swarms of my bees came out at 8 o'clock. There were two hives in which colonies froze last winter, and one of these new swarms went into each of the old hives. I had left the old combs in the hives, thinking I would clean them out some time, but neglected to do so. This is the first time that I ever had this happen, and I have had bees all my life.

Massillon, O., June 23. G. N. BEITER.

[The circumstances that you relate are not uncommon. In fact, we may say it is the most natural thing in the world for the scouts of a prospective swarm to find empty hives containing combs; and, when the swarm does actually come out, it goes into the hive the scouts have located. Quite recently, in making some tours among bee-keepers we looked over some old hives containing combs on which the bees had died the previous winter. On asking the owner if he had any bees he replied, saying that he had a lot of old hives with combs in them, but the bees had died the winter before. There were many other bees in the neighborhood. There had been considerable swarming among the bees of his neighbors, and we were not surprised when we found one or more of these supposedly empty hives containing bees. The scouts from the swarms had located them, and the swarms, of course, went into them.—ED.]

Our Homes

By A. I. Root

God hath chosen the foolish things of the world to confound the wise; and God hath chosen the weak things of the world to confound the things which are mighty.—I. Cor. 1:27.

I have several times alluded to a period in my life when I thought it a fine thing to point out the faults in professing Christians, and even to ridicule the precepts of the good old Bible. I think I had been keeping rather bad company at that time of my life. I was also very busy in accumulating what I could of the things of this world. Somehow I had forgotten, or, rather, set aside my good old mother's teachings, or at least I had lost sight of them, apparently, for the time being; for God knows I never strayed very far away from that good and sainted mother. At the time I mention, I was not attending church nor Sunday-school. I do not know but there were several years of my life, when I was between 20 and 25, when I rarely attended religious services of any kind. When I look back now and think of it I am led to exclaim in wonder, "Was that really A. I. Root?" The ministers of the different churches of Medina called on me, it is true; and I think I sometimes gave a little contribution for keeping up the church and Sunday-school; but whenever I talked with those good pastors I generally persuaded them, or at least tried to persuade them, that I was a "pretty good sort of man," after all. I "paid my debts," "did not get drunk," etc. One day while I sat working at the bench (for I was a watchmaker and jeweler) I said to the young man who was my assistant and clerk, "Who is that red-haired young man whom I have seen on the streets several times lately?"

"Why, Mr. Root, that is a young theolog from Oberlin. If I am correct, he is to be pastor of the Congregational Church. Your people attend that church, do they not?"

I assented; but I felt ashamed to own up that, although Mrs. Root attended regularly, and two of our children who were old enough, were always on hand for Sunday-school, I had not been often enough to know who the minister was nor any thing about it. In reply to what the clerk had said I added, "Why, do you mean that *that* fellow is a preacher?"

"That is what he is unless I am greatly mistaken."

"Why, I do not believe that that *boy* can preach a sermon. If he does, I believe I would like to go and hear him, just for the fun of it."

I thought then that it would be a fine thing to listen to his boyish attempt to preach a sermon. And another thing, it would give me an opportunity to criticise, with my very superior knowledge (?) and attainments.

I suppose some of my good friends will scold because I have given place to the above; but as nearly as I can recollect it gives pretty correctly the true dimensions of your old friend A. I. Root when he was the father of a family of only two children old enough to go to Sunday-school. After that I forgot all about the young minister; and perhaps I would not have gone to hear him preach after all had not something occurred to call the boy preacher to mind again. Mrs. Root, although then not a member of any church, has been, every moment of her life, a firm believer in the Bible and Christianity. When I declined to go to church, shortly after our marriage, she always went whether I did or not; and as soon as our children were old enough to go to Sunday-school they were always on hand.

You may have gathered from these Home talks that Mrs. Root is a very neat and tidy housekeeper. Not only that, she has a wonderful faculty for keeping the children neat and tidy. I never came home from my work without finding the boy and the little girl, at the period of which I am speaking, looking neat and sweet, and ready to be kissed; and Sunday mornings especially they were fixed up just as neat and trim as it was possible to fix them with our humble means at that time, for it is true, dear friends, that Mrs. Root and I commenced housekeeping with almost no capital; and for many years after, we saved the pennies and cut down expenses in every way; and may the Lord be praised that we *did* have to make our own way in the world.

Well, I was always "tired" on Sunday—at least I said I was. I had been confined in the shop and behind the counter a dozen hours or more every day, and Sunday I wanted a *rest* day. I did not exactly rest all day Sunday, either, although I often talked about it. Well, one Sunday morning Mrs. Root proceeded as usual to fix up the children for Sunday-school. She got the boy ready first; and while she was shining up the shoes for the little girl and putting on the finishing touches in other ways, this boy came into the front room where I was sitting in the middle of the room in a rocking-chair, perhaps reading the *Scientific American*. I looked up and admired him. He certainly was a bright handsome boy, and he and I were the greatest friends in the world. He asked questions, and I answered them to the best of my ability; and we were both greatly interested in all that was going on in the beautiful world that God has given us; yes, I felt it even then, but I did not state it then in exactly that way. While I was reading something that greatly interested me, Ernest (for he was the chap) commenced walking around my chair. When he was in a brown study about any thing, or when something was on his mind, he had a habit of walking around in that way. I soon recognized that something was troubling him; so I laid aside my paper and said, "Well, Ernest, what is it?"

Without replying at once he looked up to me in a wishful sort of way and hesitated.

When I encouraged him, however, by saying, "Come, my boy, can't you tell papa what troubles you?" he looked me in the face and gave me a little sermon. It was a boyish sermon, but it was a sermon after all, and one of the most effective sermons I had ever heard before or have since. I had been laughing at the idea of the *boy* preacher whom I saw out on the walk; but here right before me was a boy preacher sent from God, perhaps in answer to the prayers of the old mother. The sermon that took such a mighty hold on me at that time was something like this:

"Why, pa, don't you think it would be better if you would dress up Sunday mornings and go with ma and Maud and me to Sunday-school instead of going off to the woods Sundays as you often do?"

I think that was about all of the sermon. It was short, but it was to the point. If anybody else had presumed to dictate to me how I should pass my time on Sunday I might have resented it. I had already discovered my ability in certain directions, and I was a little touchy about having anybody tell me what I ought or ought not to do; but I did not dare to speak crossly nor unkindly to that bright, clean, blue-eyed boy. I do not know what answer I gave him. I fear I did not thank him for the effort he had made, for it was something of an effort to rebuke the father whom he loved and patterned after; but after he had said what was on his mind he was evidently relieved and happy over it; for pretty soon afterward I heard him singing and shouting in his childish way, apparently forgetting or not recognizing the weight of the message God had sent and he had delivered.

I can not now recall whether I went to Sunday-school that morning or not. The question the boy asked kept ringing in my ears—"Would it not be better? would it not be better?" and I finally surprised Mrs. Root by making myself presentable, and going along by the side of the children; and I did also go to hear the boy preacher. One incident I shall always remember that he brought out in that first sermon I ever heard him preach. It was something like this: He was trying to tell his hearers the difference between true Christianity and an utter disregard of the gospel claims. Just about that time a steamboat took fire on the Ohio River. There were not enough life-boats and rafts to get the passengers ashore, and each little craft was loaded down with just as many as it could carry safely. Some women were put on a raft. A big burly man climbed on with them. The raft began to sink, and it was evident that it could not hold them all. This big man, in order to save his life, with his superior brute strength struck the poor weak helpless women, knocking one or more of them off into the water to drown in order that his great bulky worthless carcass might reach the shore. A cry of consternation and horror came up from the spectators on both sides of the river, who had gathered to help save the lives of the passengers. But this fellow got off on the West Virginia side, and escaped off among the hills before the outraged inhabitants could get hold of him.

The boy minister gave this as an illustration of a man utterly destitute of the grace of God or the claims of religion. I soon became more interested in the boy preacher than any minister I had ever known, and finally had a talk with him; but I did not succeed at all in persuading him that I was a "good man," even if I did not belong to any church; and when he afterward used as an illustration a part of his talk with me in one of his sermons, I was very much offended, although, of course, he mentioned no names. I met him on the street afterward, and we had some pretty plain talk. I told Mrs. Root afterward that I would never go again to hear him preach; but when meeting time came the next Sunday I felt very uneasy, and finally decided to go and hear him once more after all, even if it was so late that he had probably commenced his sermon; and on reaching the church door I found he had actually commenced; but I decided to go in as quietly as I could and get a seat notwithstanding. To tell the truth, I had attended church so little at that time of my life that I either did not know (or, perhaps, care) it was bad taste to enter after the minister had commenced. Either he had come to a pause in his sermon or else he decided to wait until I was seated before he went ahead, and that vexed me. While his sermons caught hold of me they did not contribute very much to my peace of mind. Some time after, we met and had quite a talk, and finally we seemed to be getting into an unprofitable disagreement. He, evidently recognizing this, said something as follows:

"Mr. Root, it evidently is not best for either of us to prolong this discussion."

He stood a moment without saying anything more. As I learned afterward, he was, even at that early period of his ministry, much given to silent prayer for guidance, so I can readily believe he was praying for the Holy Spirit to lead him. He finally said something like this:

"Mr. Root, you have a boy, I believe, and you love that boy."

"Yes, God knows I do love him," I replied.

"Well, now, Mr. Root, do not answer me, I beg of you, but answer the God who made you. Do you want that boy to grow up exactly such a man as you are?"

As I made a motion to reply he raised his hand and said:

"Please do not answer me. Answer your Maker. It is between you and God."

Then he left me. Had he permitted me to reply to him I would have said promptly, that, if the boy grew up to be as good a man as I was, he would do pretty well; but I was considerably stirred up by the question; and I want to digress a little right here to consider this matter. Some very good people and some very truthful people when excited

or vexed will say things and stick to them that they would not say when unruffled or unprovoked. We can not call such things falsehoods, for the one who utters them is at the time honest about it. Oh how many times I have made statements or assertions in the heat of the moment that I wanted to take back after I had cooled off, as it were, and could take a reasonable view of all the circumstances! The good book has well said, "He that ruleth his own spirit is mightier than he that taketh a city."

Dear friends, I have just been telling you something of my acquaintance with the late Rev. A. T. Reed, whose name has been mentioned more or less in these Home papers ever since they were started. The above incident was called to mind by his recent death. God has called him to the joys of his eternal home where he surely has laid up many treasures where moth and rust do not corrupt, and where thieves do not break through nor steal. After the boy preacher left me his parting words rang in my ears. He said I should answer God, the great Father of all. Then I began to debate on the question. Can a man talk with God? Was it possible for me, even if I wished so to do, to tell my heavenly Father the exact truth as to whether I wanted that merry blue-eyed boy, as he grew up, to stand exactly in my foot-tracks? If it *were* possible for me to answer God, what *would* that answer be? I debated on the matter until it was time to put up the blinds and close up my store. Somehow I wanted to be alone; and when the blinds were up and the lights were out I somehow unconsciously knelt down in that silent room, and there I answered the question the boy preacher had propounded. In that moment I scanned my past life for the preceding 25 years. I remembered my happy childhood while I knelt at my mother's knee; and then I faced the question, "Shall that boy, with his childish faith, follow my footsteps?"

In agony of spirit I said, "No; God helping me, *no*." And then I breathed a prayer something as follows, so far as I can recollect: "O God, if there is really a God who hears and answers prayer, help me so to live from this day on that I shall not be afraid to have my boy follow exactly in my footsteps. Give me back, I pray thee, my mother's faith and the innocent happ'ness of childhood such as I had when I knelt at her knee in years past."

Dear friends, there was that night a sudden break and abrupt turning-point in my life. A. I. Root before that period had been somebody else; and A. I. Root since that time has really been somebody else than the man he was before that time. Although the boy minister did not stay very long in Medina, he and I had been in close touch more or less from that time until his recent death.

Since the incident mentioned above occurred, something like forty years have passed. The curly-headed boy who delivered the boyish sermon has not only grown up to manhood, but a curly-headed boy like himself came into his home; and this boy has grown to manhood. In fact, he is so tall that he almost looks down on myself when he calls me "grandpa." This boy and I have just returned from a trip up in Northern Michigan, to the old original "cabin in the woods." By the way, dear friends, one might naturally suppose that a man who is seventy years old, and has retired from the arduous duties of a busy life, would have little temptation to *do* wrong or even to *think* wrong. But do not be misled. Satan will keep on testing and trying you, probably, to the end of your days. While off on that pleasant trip a temptation presented itself; and, as usual, Satan suggested that there was nothing particularly wrong about it. I remember that he added that "a good many Christian people do not seem to think it is any thing out of the way." While I was hesitating, something called up to memory the incident of years ago; and then the good spirit (could it be a voice from the past, suggested by the memory of my dear departed friend Rev. A. T. Reed?) said, "Would you like to see that child of yours or that grandson of yours hesitating about this very thing you are considering just now?" Swift as the wind came my decision. If this young boy, not yet out of his teens, considers his grandpa just about right, and is ready to copy him, may God help the *grandpa* (and all other grandpas, for that matter), to keep very closely in the straight and narrow path that leads from earth to heaven. If I remember correctly, Satan did venture to suggest, as he backed off out of sight, that the grandson "need never know any thing about it *at all*." And then he added that many things are quite right and proper for men of seventy that would, *of course*, be entirely out of place for a boy in his teens.

In a future Home paper I propose to discuss the two concluding suggestions that Satan offered and *continues to offer*.

Notes of Travel

By A. I. Root

The kingdom of heaven is like unto leaven which a woman took and hid in three measures of meal until the whole was leavened.—Matt. 13:33.

On the first day of July my oldest grandson and I made a short trip to the Grand Traverse region of Northern Michigan. On the morning of the second day we stepped off the cars at Traverse City. It was hot and sultry and dusty, for there had been no rain in that region for almost a month. This condition of affairs prepared us to take in the beauty of a pretty fountain of water, clear as crystal, close to the Grand Rapids & Indiana station, and a part of the depot grounds. This stream of water, although it comes from an artesian well, is beautifully cool and pure as it pours into the stone

basin in such volume that nobody need fear "wasting the water." In fact, a clean wash-bowl stands on a bench right beside the reservoir, and anybody who chooses can take a bowlful of the water out on the green grassy lawn, and wash off the coal cinders and dust to his heart's content. If more railway companies would add such a lavatory, or a similar one, what a boon it would be to a tired and dusty public! There is one trouble, however—not every locality can well furnish such beautiful clear water as we find *everywhere* in Northern Michigan. The streams that come down from the springs up among the hills are all pure clean water. When they run over the pebbles they do not leave that disagreeable muddy incrustation so common here in Ohio. I suppose it is owing largely to the sandy soil and the sandy hills.

Leland and I took a trip on the train of about ten miles, which landed us within half a mile of our cabin in the woods. Although our suit-cases were rather heavy, together with a basket of provision to last over Sunday and during the 4th of July, we took a short cut through the woods to see the spring that supplies the water for our ranch. There it was, sure enough. A ¾-inch iron pipe was pouring a stream the full size of the pipe into a barrel set in the ground right in the midst of the cool dense woods. This water is soft enough to wash with soap; and the severe drouth seemed to make no difference with the volume of it. That old home in the woods had been neglected for two full years. I did not get around to see it last summer at all. Two years ago I told you about the beautiful mulberries on two trees near the door. They were just the same on this visit. One of the trees bore black mulberries, while the other one bore pink or white ones; and it seemed to me as though I never saw fruit of any kind packed so closely together on every limb and twig as I saw on that whole tree. Here in Ohio the birds get about all of our early mulberries and cherries, almost before they are ripe; but up in that great fruit region of Northern Michigan there do not seem to be enough birds to go around. The berries were so ripe that they are dropping on the ground; and by spreading out a newspaper and shaking a limb it is an easy matter to fill a berry-basket in a twinkling. I do not know the name of this pink mulberry. The fruit is small—nothing like the mulberries in Florida *in point of size;* but they have a rich and delicious taste, reminding me every time I taste them of some beautiful custard. Besides the mulberries there was a great plenty of currants from the eight varieties I planted there years ago. There were also a few ripe cherries. It is interesting to note what varieties of fruit and shrubbery would make their way without any care in pruning or cultivation in two years or more. The mulberries grew all right. The apple-trees, or most of them, were making a satisfactory growth and contained some fruit. but they were hardly old enough, however, to bear very much. The cherry-trees, or most of them, have suffered either from lack of cultivation or a suitable mulch. The peach-trees were getting along very well, but were damaged by many dead limbs from a lack of judicious pruning. My asparagus plantation did finely; but most of the other stuff put out years ago had gone down in the battle, or what Darwin called "the survival of the fittest."

Sunday morning we were up bright and early and over in the Bingham Sunday-school. As the teacher was absent I had my old class of thirty or forty bright boys and girls. Before closing the school the good woman who had been for so many years superintendent asked me to give the school a little talk. Our lesson for that Sunday was the one about the mustard seed and the leaven put in the meal. I told the friends assembled there that I had, during my busy life, dabbled in many enterprises. I had tried chickens, strawberries, potatoes, honey-bees, and some other things. Some of my ventures, in time and money, have given good dividends, and some have not. Then I closed by saying something like this:

"Dear friends, I am getting almost too old for many more kinds of business. I may be very soon called by the good Father to leave this earthly home; but when I feel my time has come I shall look back over my life, and I am sure I shall feel that the time and money I have invested here in this Bingham church and Sunday-school is one of the *most satisfactory* investments I have ever made. I shall think of it as 'treasures laid up in heaven, where moth and rust do not corrupt, and where thieves do not break through nor steal.' When I first came into your midst, something like ten years ago, when they told me there was no Sunday-school here at all I started out one Sunday morning, and, with the help of some who, I think, are here to-day, we had a bright well-attended Sunday-school before half-past ten o'clock, the time for the meeting. If I am correct there has been a Sunday-school here winter and summer ever since. But some of you told me it could not well be kept up during the winter because the snow drifted so deep down around this little church between the hills. I asked some of the boys the question whether the snow ever got too deep to make a path to the saloon near by. Well, may the Lord be praised for the fact that now there is a good path to the church every winter. But there is no path to the saloon at all, because for several years there has been *no* saloon at all. The influence of this Sunday-school, that I am proud to say I helped to start on that spring morning, has been like the leaven that the good woman hid in three measures of meal in the lesson we have been studying this morning. I have been told by people who live in the neighborhood that the Sunday-school and the church have leavened the whole community round about here. When dear

Bro. Reed spent a couple of weeks here by my invitation, in his effort to build up the church, some of the folks laughed at us because our church-members were 'just a lot of children.' But when this lot of children stood up in this little church for the Lord Jesus Christ they signed the pledge for life, and they are here yet. Some of them have grown so much since I last saw you that I did not know them. You little know, dear friends, young and old, what the outcome may be away along in the great unknown future, of the work that has been done here by your superintendent and others."

Four or five years ago I made a flower-bed across the front end of the church, and filled it with plants from the greenhouse in Traverse City. I was happily surprised to find this still kept in beautiful trim, even though it entailed bringing quite a little water during the present drouth. When I inquired who cared for the bed and the plants so nicely, the answer was, "The women folks of the church."

After the school was closed I was told that a Y. M. C. A. had been organized, and that they met just before the sermon in the evening. I was requested to talk to the Y. M. C. A. members, and tell them what I could about that association and what it is doing in the great outside world. Of course, I did this gladly, and I also gave a brief account of what the Y. M. C. A. has done to open up China to the gospel of Christ Jesus, when the missionaries of the different churches have failed after years of earnest effort.

As it was time for the evening service I prepared to close and sit down; but somebody suggested I keep on talking until the minister should arrive. As he has now a circuit of four different churches he is sometimes a little late in getting around. I was told I would know him when he came in the door, for he is a one-armed man. As he had recently come to Bingham church I thought he might be a little surprised to see a stranger talking to his flock; and therefore when I saw him come in the door I stopped my story and introduced myself. But he took a seat near me and bade me go on and finish my talk. I should like to tell you something about that sermon if space permitted; but I can say this: Even if he *did* lack an arm, there was certainly no "lack" in spirituality and ability to proclaim God's message.

I had proposed to spend my 4th of July in packing up our tools and implements, that were no longer needed at the "cabin in the woods;" but I told Leland to go to Traverse City and celebrate if he felt so inclined. But he declared he would rather spend the day with me in the woods than to be with a crowd in the city. He said he used to enjoy such things when a boy (?), but he did not care for them of late. Pretty good for a boy of nineteen—don't you think so? I wonder if even the boys are not beginning to realize that a "safe and sane" 4th of July is more fitting for the present age and progress of a Christian people. Is it not really true, dear friends, that even in celebrating the 4th of July we are getting on higher ground? I forgot to tell you that at the *conclusion* of that Sunday-school they sang "Mr. Root's favorite hymn" ("Higher Ground"). See page 469, July 15.

After we had got our stuff all securely boxed and crated I took a trip over the hills to engage a neighbor to haul it up to the station at Traverse City next morning. This neighbor, like most of the people in that region, was engaged in growing strawberries largely for the Chicago market. This year, just as the first strawberries began to ripen, and were ready to ship, a severe drouth sat down upon them, and thousands of dollars had been lost in consequence. I was interested in knowing what could be done to avert the disastrous results of such a drouth. Of course, clean cultivation and stirring the soil constitutes one of the best remedies for drouth; but when the berries are just ripening this is hardly adequate. Mr. Hilbert thought the best remedy, added to the above, is heavy mulching, and have the mulching put on so as to get thoroughly soaked before the drouth comes on. Mr. Palmer, close by, has a "water-wagon" that he backs down into Grand Traverse Bay under water. It fills itself, and then he draws the load up into his garden. In this way he had saved a part of his berries; but it takes a deal of water and much hard work, even with such a rig. Red raspberries were also a great industry in that region. and Mr. Palmer had about the nicest-looking patch, in spite of the drouth, that I think I have ever seen.

As I have mentioned before, one of the great industries of that region is the beautiful cherries that they ship to Chicago. While I was there my neighbor Hilbert took me through his seven-acre cherry-orchard; and in spite of what I have said about the other fruits in Florida and elsewhere, it seems to me now that I would like to place his beautiful great luscious black Tartarian cherries at the very top of the list of beautiful-looking and delicious-tasting fruit that our heavenly Father has ever given his children. Just think of it! seven acres of beautiful cherries without spot or blemish, some of them rivaling the colors of the rainbow; but the glittering, bright, shiny black Tartarian, I believe, caps them all. How can anybody on the face of the earth talk about their high-priced wines (not to mention brandy), when they can get such delicious nectar right direct from the hand of the beneficent Creator?

I told you some time ago that Mr. Hilbert, besides his cherry-orchard, had forty acres of peach-trees. His good wife and I tried to dissuade him years ago from going into the peach business so heavily; but he has kept his 4000 trees going for seven or eight years, and this year he is going to have a pretty fair crop. He said he had spent at least 100 days personally in pruning his 4000 trees

according to his own notion. Judicious pruning prevents dead limbs, breaking down, overbearing, and a host of other evils.

After leaving Traverse City we went to Frankfort. This is where is located the Chautauqua grounds of the Northern Michigan Congregational Assembly. The assembly grounds are about two miles from the station, surrounding a beautiful little lake, or, rather, it is between Crystal Lake and Lake Michigan, where there are cottages, something like a hundred in number, and where the Congregational people from all over the United States meet each year during the month of August. Well, as my brother-in-law, J. G. Gray, was superintending the building of a cottage there for our pastor here in Medina, Leland and I took a trip over to the grounds. I have told you a good deal about the beauty of the Michigan woods; but this spot on the shores of Lake Michigan, where these cottages are located, contains more attractive wild vegetation than any other spot I have ever touched. Not even the tangled tropical vegetation of Florida can equal it. There are pine-trees in those Frankfort woods that looked to me exactly like the celebrated pines of the Black Hills of South Dakota. There are more beautiful evergreens growing out there in the wilderness than any you can find in our city parks, and they were trained and fostered by the hand of the Almighty and nothing else. There are berries I never heard of before, and very good and wholesome, as we proved.

Many of these cottages are located on a bluff that drops abruptly down to the waters of Lake Michigan. Well, along this beautiful white clean sand, especially where the waters keep it wet, there is a nice clean pathway for miles where you can run a bicycle and automobile, or any thing else to perfection. In climbing down the bank, right in the pure white sand I saw a species of vetch with blossoms that rivaled any of the sweet peas of cultivation. Now, this plant, besides its beauty, must be a valuable legume. I did not think to offer it to the horse we got at the livery stable; but I am sure he would eat it. Now, would this plant whatever it is, grow under cultivation with as rank luxuriance as it does here in clean sand, almost white?

When we got back to Frankfort my brother-in-law said I must not go away before I had seen a certain beautiful fruit-orchard. As it was only over a little over a mile away from the hotel, I walked out. There I saw the beautiful black Tartarian cherries I have described before, besides the greatest variety of fruit you can imagine, all under the highest state of cultivation. Heretofore when I talked with the farmers of Northern Michigan about chemical fertilizers I could not learn that they had ever been tried; but Mr. C. H. Chapman has been making a success by the use of what he calls Buffalo fertilizer. Notwithstanding the excessive drouth, he had acres of raspberries, blackberries, and almost every other fruit showing wonderful luxuriance and evidence of great crops. While thinning his peaches he had little girls employed only ten or twelve years old. Of course they had a foreman to watch and instruct them. But these girls would climb all over the trees without bruising or injuring the limbs, perhaps better than anybody else in the world.

When I saw more peaches on the ground than were left on the trees, it seemed as if it could hardly be the thing to do; but Mr. Chapman has had such wonderful success that I presume he knows what he is about. There was a report that he had been offered $30,000 for his forty-acre tract. Thirty acres of the forty contained fruit of different kinds, now in full bearing. By standing on his porch he can not only see every train that comes into the depot, but he can see every steamer out on Lake Michigan; and it is so desirable to get the fruit quickly from the trees to the railroad station that he makes a practice of keeping a lookout on his porch, and starting his wagon so as to have them reach the train or steamer that is already in sight. I do not know but this almost beats wireless telegraphy.

Now, here is another example of what an intelligent man can do with land that some people might say is not worth taking as a gift; and he gets his crops of fruit, too, when things with ordinary management are dried up and ruined by drouth. Of course, Mr. Chapman will lose a part of his crop of strawberries; but the raspberries and blackberries, plums, and peaches seem to be but little affected as yet.

Before closing I wish to add that C. D. Sheldon, author of "In His Steps," besides a host of other great speakers, is to be present at that Frankfort assembly during August.

Just as I finished dictating the above I was informed by the Pere Marquette Railway Co. that on Tuesday, Aug. 16, they will have an excursion from Toledo to all Northern Michigan points for the small sum of $5.00 for the 15-day round trip. I presume likely that on that date your station agent will make you a like low rate from your own station to points in Northern Michigan.

Poultry Department

By A. I. Root

A HEN THAT LAYS 200 EGGS OR MORE IN A YEAR; HOW AND WHERE SHALL WE GET HER?

I suppose it is generally recognized that the South Australian tests for egg-laying are not only at the head of the world, but as the tests were managed by disinterested committees they are probably authentic. From an article by D. F. Laurie, of Adelaide, South Australia, published in the

American Breeders' Magazine, we are told that poultry-breeding in South Australia dates back 60 or 70 years. About 25 years ago several importations were made. These birds hailed from America. I presume our readers are more or less familiar with the manner in which the tests were made. Six hens were confined in a pen; and, as I understand it, about 25 pens of 6 pullets each headed the contest. The highest score that has ever been made, if I am correct, was 1447 eggs from one pen of 6 hens in one year. This would give a little over 241 eggs for each hen. Of course, some one or more must have laid more than 241 eggs, and some less. It would have been interesting to take these six pullets and afterward test them singly. Now, then, how did they manage over in Australia during the past 25 years to produce pullets with such a score? The following clipping tells us something about it:

Testing.—While a few still adhere to the old method of trap-nesting, the advanced breeders pen the pullets singly in small but convenient pens. Here they undergo the ordeal, the result of which decides whether or not they are to be retained as breeders. As a rule these pullets are not unduly forced; they are supplied with suitable foods in variety, but are not pampered. Few breeders would attach much value to a pullet with a 200-egg score for the year; she must lay 220 to 240 to cause any enthusiasm, and above that yield she becomes precious. Those whose test is satisfactory are specially distinguished by leg-bands and numbers, and particulars are carefully recorded.

The Male Bird.—Our breeders attach as much importance to the ancestry of the cockerel as to that of the pullet. The selected stud bird has been, up to the present time, exemplifying the doctrine of the survival of the fittest. He has, with his mates, first of all to pass muster as to type, carriage, general style, and vigor. After that he holds his own in the daily battles; who crows loudest and most frequently, and shows his strength and vigor in every detail, becomes the apple of the breeder's eye. His pedigree is accurately known, and much thought is given to the selection of his mates from among the best second-season tested females.

I prefer single testing to the use of trap nesting; i. e., each pullet or hen in a separate compartment for the whole term of testing, with no possibility of errors or mistakes. I am absolutely certain that the only way to get a flock with a high average egg production is by testing all pullets during the first year before they are bred from.

To me the most interesting part of the above is the last paragraph. The reason I say this is because I have been deciding for some time that the only way to test our flock is to have a series of pens, one or more, according to the size of your flock, where you can put one hen at a time; and when I get down to Florida again I am planning to have a dozen or more such pens. It is some work, and it will cost something—that is, if each pen has facilities for giving a confined pullet every thing she needs. I have alluded to one of the poultry secrets along this line—see page 385, June 15, 1909. Briefly, I would have these pens side by side, each about 3×6 feet, and 2 feet high. The top should be a movable lid or door that can be raised up so you can reach inside, or, if necessary, step inside. In hot weather there should be shade as well as water, and feed and a convenient nest-box. You *can* have two hens in one compartment, or possibly three, if they lay eggs so different you can distinguish them by sight. Then you would have to have some sort of leg-band or mark on the hens. Of course, you would not need to keep the pullet in these single pens a whole year unless you choose. In ten days, or say a month, you can determine pretty well if a pullet is worth keeping. If your whole flock was given a test of, say, ten days or two weeks, I think it would pay all cost. For instance, I always find more or less hens that lay eggs with thin shells or no shells at all, and it is always the same hen that does it. Some of the other hens lay crooked eggs. These had better be gotten rid of. Others lay double-yolk eggs and keep doing it. There are still others that lay under-sized eggs; and we have been told, most important of all, that there are more or less hens in every flock that *never* lay an egg of *any* kind. I do not know how true this is. I have visited a number of poultry establishments where they had from three to six hens in a small pen. If you get three eggs every day from a pen of three hens, you will know the whole three are good layers; but I am inclined to think the safest and surest way is the one our Australian friends declare for—each pullet to have a separate compartment until she has been tested at least once.

Temperance

While at Frankfort, Mich., I picked up a paper on the reading-table at the hotel, called the *Michigan Christian Advocate*. From this paper I make the following clipping:

In delivering his address at unveiling of the memorial tablet at Jackson, two weeks ago, President Taft indicated his belief that the next great party issue is to be socialism, thus ignoring the prominence of the prohibition question and the vital issue whether this country is to remain half sober and half drunken as it writhes in the grip of the saloon.

The truth is, no American president has ever yet officially taken up the saloon question, calling upon the sober elements of the nation to rise to its mastery and solution; and now our great diplomatic leader in the executive chair suggests the pending property issue as the one worthy of immediate party adoption.

THE NEWARK TRAGEDY.

As we go to press we find the papers full of this sad affair between righteousness and iniquity. Below is a clipping, but I neglected to take the name of the periodical that published it, but it seems to hit the point:

Newark did not only lynch a man, but *lynched the law* last Friday night. When the mob held sway and carried out its purpose the interest of every citizen suffered. The city was dealt a blow from which it will take years to recover.

Here is another from our own *Medina Gazette*. I particularly enjoy reading it because its editor was, years ago, a pupil in my Sunday-school class. In commenting on the Newark affair he says:

These conditions tell an old, old story, namely: That the saloon business cares nothing for law; that the average rum-seller puts greed of gold and appetite for intoxicants above law, and stamps law beneath his feet. He does it everywhere and always. He doesn't expect to obey law if it affects his business adversely. He makes himself an outlaw to carry on his business. That's the fact, and it marks the character of the whole business of rum-selling. And last Friday at Newark, be it remembered that it was the saloon gang that began the appeal to force and lawlessness, and not the despised imported detectives.

I have several times in these columns called attention to the fact of "Duffy's whisky" being paraded as a medicine. We clip the following from the *National Prohibitionist:*

The mayor of Moss Point, Miss., was recently fined $500 for selling a case of Duffy's malt whisky. His honor runs a drugstore, and in defense pleaded the "medicinal character" of Duffy's stuff; but the judge was wise, and his honor will think twice before he sells another case of fake medicine.

In regard to the Newark tragedy, there seems to be quite a little discussion at present as to whether it is just the thing to let a *county* decide whether a considerable-sized city shall go dry when a majority of the city is wet. My stenographer, W. P. Root, suggests that, if a city wants the privilege of "drinking with a clear conscience," the people of that city should pay all the expense arising from the use of drink within that corporation, and not call in all the county to help shoulder a burden to which it was opposed in the first place. Compel only those who vote wet to pay for the wetness and the wetness will soon dry up.

This city of Newark has about 30,000 inhabitants, and they voted wet by a considerable majority. But Licking County overruled the votes of the city. Now let the *city* and not the *county* pay the tremendous cost of this recent reign of anarchy, and also shoulder its deep disgrace.

Health Notes

By A. I. ROOT

ROLLED OATS FOR PEOPLE AND CHICKENS.

On p. 396, June 15, E. P. Robinson speaks about his boy of five and girl of three who have not used ten cents' worth of medicine in all their life. These children are in the habit of using rolled oats put in a cup of milk, more or less as a finishing-up for every meal. Well, we have recently had a 90-lb. sack of rolled oats from the Quaker Oats Co., Chicago, which has given us great satisfaction. In fact, we like it better than the oatmeal bought in pasteboard packages at the groceries, and it costs only about half what we pay for oatmeal in packages. I have been following the children mentioned by friend Robinson. At the close of almost every meal I fill a teacup with rolled oats, and then pour on just enough milk to moisten it fairly well. In this condition you can readily dip it up with a spoon, and chew it just as long as T. B. Terry and Fletcher recommend; and after you have chewed it long enough to bring out the beautiful flavor, I think you will agree with me that it is a splendid addition to any meal; and you will soon discover that your strength will hold out better on this dish of oats and milk than almost any thing else. A writer in the *Rural New-Yorker* seems to have come to the same conclusion. Here is what he says about it:

At the present time I can buy rolled oats in Chicago at $2.18 per 90-pound bag, or less than the price of flour. They are 50 per cent richer in protein, and 600 per cent richer in fat, than flour, and we use them liberally in all our bread and biscuit, and uncooked with butter, cream, or cocoa, to the great advantage of our children at least. What do your rolled oats in packages cost per pound?

While on this matter of simple diet and uncooked food I want to give you the closing paragraph of a letter from my good friend and neighbor T. B. Terry:

I have worked long and hard over this diet question, to find what will give ideal results and not be unnecessarily narrow. And I assure you I am getting ideal results, and my diet is reasonably broad. I can not think a man is living who for years has done better than I have, he eating only nuts and fruits. You know I have been some ten years working at this. Actually, brother Root, I am in finer trim to-day than I was a year ago, and I was more than satisfied then. It is great—never an ache, never a pain; never even a bad feeling; able to work hard and long in my study right along, seven or eight hours, and not know what tired is. The apples you eat at night make a meal, but one that is probably digested easily in about an hour. If I want to do an extra day's work I sometimes eat only fruit for breakfast. You can cure your deafness and every thing else. It is God working through natural means, and he can do any thing. In years to come, God-fearing doctors will look back on needless operations, on mutilating the body he made, as they now look back to the days of bleeding.

T. B. TERRY.

THE CHAMPION HONEY-EATER OF THE WORLD; A MAN WHO CAN EAT A BARREL OF HONEY INSIDE OF A YEAR.

I read somewhere that in France they had got our common red clover started that had short nectar-tubes, the same as sweet clover. Is it true? If true, it should wake up that old bee war-horse, A. I. Root.

I began eating extracted honey Nov. 11, 1909, for kidney trouble, and have used a 60-lb. can every three months since then, using my third can now. It cured my kidneys. This is at the rate of 240 lbs. a year. I can eat 300 lbs. a year, I think, and may be more. I eat pumpkin pie (squash is better) to make me crave something sweet. Custard and cream pie are also fine. If you eat salt it will make you crave water. I live alone. I eat the honey myself. Am I the champion honey-eater? If not, I will try to eat 400 lbs. in a year. That would settle it. I don't want any one to eat more honey than I do if I know it.

Jonesboro, Ind., June 5. C. A. NEAL.

Friend Neal, the matter of growing a strain of red clover with short nectar-tubes was discussed at considerable length in these columns something over 25 years ago. Our old friend E. E. Hasty, of Richards, Ohio, was quite enthusiastic about it, and gave a report of his experiments for two or three seasons. I have not heard any thing about it of late.

If I understand you, my good friend, you have already consumed two 60-lb. cans of honey. Well, such a remedy ought either to "kill or cure." If it cured your kidney trouble we certainly ought to rejoice; but I must confess that I can not exactly approve of pumpkin and custard pies for a man who is troubled with indigestion.